THE MARINE RECORD.

DEVOTED TO COMMERCE, ENGINEERING AND SCIENCE.

$2.00 PER YEAR. ESTABLISHED 1878. 10c. SINGLE COPY.

VOL. XVIII. CLEVELAND, OHIO, NOVEMBER 7, 1895. NO. 45

LIGHTS FOR THE ST. LAWRENCE RIVER.

Col Jared A. Smith, of Cleveland, and Commander Gridley, of Buffalo, spent a part of last week on Lake Ontario and at the head of the St. Lawrence River, having been sent to look over the grouud in response to a general request for more aids to navigation on the St. Lawrence River. They have recommended the establishment of a light-house on the north side of Carlton Island, one of the Thousand Islands, and another light-house on what is generally known as Chapman Shoal, although it is solid rock, near Clayton, N. Y. They also recommend that a buoy, bearing a hanging lantern, be placed to mark a shoal near Sister Island, and that a new range of two beacons be constructed near Oak Point, the range to be used in keeping the channel between Sister Island and the "Cross-over." It was further suggested that a buoy, possibly one of the new gas buoys already constructed, be placed on Bay State Shoal, at the "Cross-over."

The engineers also made an examination at the harbor of Wilson, N. Y., just below the mouth of the Niagara River, which has asked for a light, and will recommend that a pierhead light be placed there.

THE PASSENGER LINES.

The Detroit & Cleveland Steam Navigation Co. announce their intention of keeping the route between Detroit and Cleveland open just as long as the ice will permit of navigation. While the work may be attend with some difficulty, they expect to keep one or both boats running until January 1.

The Cleveland & Buffalo Transit Co's. directors, at a meeting held Tuesday, formally decided to give the name "City of Buffalo" to the new boat now building at Wyandotte for this company. The City of Buffalo's hull is so far advanced that she could be placed in the water at any time, but the builders will postpone launching her until the weather begins to break up, or early in December.

The Cleveland & Buffalo Transit Co. has just leased, for ten years longer, the dock it has occupied at Buffalo for the past three seasons. General Manager Newman thinks he has the best dock in Buffalo, 250 feet, with a street on each side. The company will spend a large sum of money in making repairs of a permanent character and remodeling the building this winter. The directors have decided to put the State of New York on a western route, but just what ports she will visit has not been decided.

THE STEEL CANAL BARGE FLEET.

The steamer Alpha and her five barges have finally cleared from New York on their second return trip to the lakes, after vexatious delays at the docks of the metropolis. They have rather a miscellaneous cargo, including 3,000 barrels of sugar, a quantity of spiegeleisen for the Johnson Co., a consignment of California dried fruits and other goods. It is thought the fleet will reach Cleveland about Nov. 15, as on the down trip they made the run from Buffalo to Albany in a little more than seven days. It is the intention of General Manager Wheeler to send the boats back to New York and to winter there.

He has also decided that the steamers should have more power and should tow only three barges instead of five, in order to keep up the schedule time necessary to success in the package freight business. Owing to the fact that sufficient water does not get around the full sterns of the barges to make the rudders produce an immediate effect, General Manager Wheeler has a plan for placing auxiliary rudders.

THE RAM KATAHDIN.

The ram Katahdin underwent her official trial in Long Island Sound on October 31, and according to unofficial figures covered the course of 34 knots in 2 hours 6 minutes and 16 seconds, which, when the tide figures are computed, may, it is thought, bring her up to the contract speed of 17 knots per hour. The apparent speed made is given as 16.15 knots. Her engines, which were started at 130 revolutions per minute, rapidly ran up to 141, and showed an average of 139 for the first 4¼ knots. The ram's prow rolled up considerable water, and the sea was quite choppy towards the latter part of the run. She failed to accomplish what was expected of her in the way of speed, but, as she has several hundred more horse-power than the designs call for, the difficulty apparently lies with the model of the ship, which was designed by the government. The Bath Iron Works was the only bidder when the contract was awarded, and the ram will undoubtedly be accepted.

BOTH LICENSES REVOKED.

Local Inspectors Dodge and Bloecker, of the Grand Haven district, who have been investigating the Cayuga-Hurd collision, have reached the conclusion that the masters of both steamers were to blame, and have revoked their licenses. The Cayuga was commanded by Capt. George Grasser, of Buffalo, and the Hurd by Capt. Charles Wilson, of Chicago. Capt. Grasser has held first-class pilot's papers for 22 years, and Capt. Wilson for half that time. The details of the report have not been made public, but the inspectors state that the two masters violated Rule 15 of the new regulations embodied in the White law. The masters may appeal their case to Supervising Inspector Galway. In any event they can pass examination in their respective districts, and obtain new papers.

ASHTABULA WILL IMPROVE.

The electors of Ashtabula endorsed, by a vote of 1,079 to 305, the proposition to bond the city for $15,000 to make a twenty-foot channel in its inner harbor, to correspond with the work done in the outer harbor by the government. Ashtabula has been built up and is largely supported by its harbor, and fully appreciates the fact. The progressive spirit is very much in evidence all along the south shore of Lake Erie.

The hydrographic officers on board the U. S. S. Michigan, have been ordered to make a complete survey of Toledo and other harbors.

THE FREIGHT SITUATION.

The fictitious advance in the Lake Superior ore rate, which was announced last week, speedily became real, and the ore freights have remained steady at that figure ever since, notwithstanding the fact that the supply of boats has been good. The ore has been more popular than 6c wheat during the week, as the elevators at Buffalo are getting filled up, and some delays have already been experienced there in unloading. The Escanaba ore rate does not correspond, the only $1.20 being paid from that port, with a number of boats chartered at a lump sum for the balance of the season to carry ore from Escanaba to South Chicago, where the receipts for the season will foot up far ahead of any previous showing. The corn rate from Chicago to Buffalo is 2¾c, equal to 3c on wheat.

While soft coal shipments to the head of Lake Superior are said to be about 75,000 tons short of last year, only a moderate amount is being forwarded. An advance of 5c in the rate is noted. Improved coal freights to Lake Michigan and Green Bay ports have caused more vessels to go into the trade, and the shortage at Milwaukee is being rapidly reduced. The reduction in lake receipts at Chicago compared with 1894 is still large, but this is more than counterbalanced, it is said, by all-rail shipments, and by the large quantities being mined in Indiana and Illinois and shipped to Chicago for immediate consumption, which permits of storing the higher grade and higher-priced Ohio and Pennsylvania coals until winter.

Wheat in store at the head of the lakes is apportioned among the various terminal elevator lines as follows:

	Bushels.
Belt line	752,729
Consolidated	1,575,552
Globe	2,080,229
Great Northern	268 379
Superior Terminal	677,724
Consolidated H	67,637
Consolidated B	145,552
Aggregate	5 567,802

The total shipments from Escanaba for the month of October are estimated at about 400,000 tons, which, with the Sault figures evolved, brings the total lake shipments to Nov. 1 up to about 9,280,000 tons. Shipments for this month will undoubtedly bring the total above ten million tons.

THE CENTURION'S COPPER.

Capt. B. B. Inman has been awarded the contract for salving the copper jettisoned by the steamer Centurion, the value of which is estimated at $115,000. Each bar will have to be picked up by a diver, who will attach a line from the lighter J. W. Fee, which has a derrick at one end. The water where the copper rests is from 13 to 20 feet.

VICTORY FOR THE ERIE CANAL.

Advices from New York are to the effect that the majority in favor of the $9,000,000 appropriation for improving the Erie Canal is about 86,000. This appropriation will deepen the canal to nine feet and will double the size of the locks.

LAKE CARRIERS' ASSOCIATION.

To consider and take action upon all general questions relating to the navigation and carrying business of the Great Lakes, maintain necessary shipping offices and in general to protect the common interest of Lake Carriers, and im rove the character of the service rendered to the public.

PRESIDENT.

WILLIAM LIVINGSTONE, - - Detroit, Mich.

SECRETARY.

CHARLES H. KEEP, - - - Buffalo, N. Y.

TREASURER.

GEORGE P. MCKAY, - - Cleveland, O.

COUNSEL.

HARVEY D. GOULDER, - Cleveland. O.

VICE PRESIDENTS.

J. C. GILCHRIST,	Cleveland.	THOS. CRANAGE,	Bay City
A. A. PARKER,	Detroit.	W. S. BRAINARD,	Toledo.
S. D. CALDWELL,	Buffalo.	E. D. CARTER,	Erie.
WILEY M. EGAN,	Chicago.	J. C. RICKETSON,	Milwaukee.
F. N. LASALLE,	Duluth.	F. J. FIRTH,	Philadelphia.

EXECUTIVE AND FINANCE COMMITTEE.

H. M. Hanna,,	Cleveland, Ohio.	D. C. Whitney,	Detroit, Mich
H. H. Brown,	Cleveland, Ohio.	W. P. Henry,	Buffalo, N. Y.
James Corrigan,	Cleveland, Ohio.	J. J. H. Brown,	Buffa o, N. Y.
H. A. Hawgood,	Cleve'and, Ohio.	David Van e,	Milwaukee, Wis.
Thomas Wilson,	Cleveland, Ohio.	R P. Fitzgerald,	Milwaukee, Wis.
M. A. Bradley,	Cleveland, Ohio.	John G. Keith,	Chicago, Ill.
J. C. Gilchrist,	Cleveland, Ohio.	J. S. Dunham,	Chicago, Iil.
E. M. Peck,	Detroit, Mich.		

COMMITTEE ON AIDS TO NAVIGATION:

W. C. Richardson,	Cleveland. Ohio.	W. M. Egan,	Chicago. Ill.
George P. McKay,	Cleveland, Ohio.	Frank Owen,	Ogdensburg, N Y.
H. G. Dalton,	Cleveland, Ohio.	A. W. Colton,	Toledo, Ohio.
B. L. Pennington,	Clevel nd, Ohio.	James Davidson,	Bay City, Mich.
Thomas Wilson,	Cleveland, Ohio.	Alvin Neal,	Port Hu on, Mich.
John W Moore,	Cleveland, Ohio.	M. M. Drake,	Buffalo, N. Y.
W. S. Mack,	Cleveland, Ohio.	W. Bullard,	Buffalo, N. Y.
David C. Carter,	Detroit, Mich.		

COMMITTEE ON LEGISLATION:

S. D. Caldwell,	Buffalo, N. Y.	James Corrigan,	Cleveland, Ohio.
James Ash,	Buffalo, N. Y.	Wm. Livingstone,	Detroit, Mich.
E. T. Evans,	Buffalo, N. Y.	James Millen,	Detroit, Mich.
P. P. Miller,	Buffalo, N. Y,	Jesse Spaulding,	Chicago, Ill.
John Gordon,	Buffalo, N. Y.	C. A. Eddy,	Bay City, Mich.
W. Bullard,	Buffalo, N. Y.	Alex. McDougall,	Duluth, Minn.
Edward Smith,	Buffalo, N. Y.	F. J. Firth,	Philadelphia, Pa.
H. M. Hanna,	Cleveland, Ohio.		

ANOTHER ADVANCE IN WAGES.

The executive and finance committee of the Lake Carriers' Association met on Friday last and advanced the wages of all members of crews except masters, mates on steamers, and engineers. Following is a list of the wages paid, as compared with the card issued September 3:

ON STEAMERS—

	New Wages.	Old Wages.
Cooks	$40 00 to $55	$35 to $50 00
Helpers to cooks	15 00 to 20	10 to 15 00
Firemen	37 50 to 45	30 to 37 50
Wheelsmen	37 50 to 45	30 to 37 50
Lookouts	37 50 to 45	30 to 37 50
Deck hands	20 00 to 25	15 to 18 00
Oilers	37 50 to 45	30 to 37 50

Firemen fitting out and laying up $1.50 per day instead of $1,

ON CONSORTS AND SAIL—

	New Wages.	Old Wages.
First mates	$45 00 to $60	$35 to $50
Second mates	40 00 to 50	30 to 40
Cooks	37 50 to 45	30 to 35
Seamen	37 50 to 45	30 to 35
Boys	20 00 to 25	15 to 20

GOVERNMENT CONTROL OF THE SAULT.

It seems that the Lake Carriers' Association, at its annual meeting in January next, will ask the War Department to assume police control of the St. Mary's River, and to establish a patrol system, with several wardens, thereby supplementing the threatened appeal of the underwriters, who have suffered immense loss from five or six collisions in the St. Mary's River this season resulting solely from causes which could be prevented by government supervision. Owners of vessels which have been in these collisions have been keenly impressed with the losses they have sustained by their vessels lying idle for repairs, even in cases where every cent of the latter has been chargeable to the underwriters.

Capt. W. S. Mack and other members of the association have submitted a suggestion to President Livingstone which has met with his approval; but it is unlikely that formal action will be taken before the annual meeting, as no government control could be established this season. The suggestion in general is that given above; but as the War Department would be likely to ask about the wishes of owners regarding the nature of rules to be established regulating navigation in the Sault, the suggestion has been made somewhat in detail, with a view to discussing these points fully at the annual meeting.

It is proposed that no vessel shall be allowed to pass another bound in the same direction, but that vessels must keep half a mile apart. The warden in charge at the lock shall have authority to give precedence to the faster boats, and the speed shall not be regulated, save by the general pilot rules and the restrictions just noted. The controlled territory, it is proposed, shall extend from the lock to the can buoy in Mud Lake, and fines and penalties for violating rules shall be fixed by the War Department. Some rules may also be proposed to regulate the action of vessels meeting.

SAULT CANAL TRAFFIC.

The October report of the traffic through the St. Mary's River shows a falling off in a number of items, as compared with the corresponding month of a year ago. When the report of the Canadian lock is added to that of the American, it is found that iron ore has about held its own. Wheat has, of course, shot considerably ahead, while copper shipments show a considerable increase. The ship tonnage was greater than in 1894, and 184 more vessels passed through the river than a year ago. During the month the canal post office handled 8,456 pieces of mail matter.

By the following tables it will be seen that the shipments of ore from Lake Superior to November 1 reached a total of 7,543,207 net, or 6,630,359 gross tons, as compared with total shipments for the entire season last year of 5,847,121 gross tons, 3,584,246 tons in 1893, and 4,376,011 tons in the banner production year of 1892.

Coal, on the contrary, shows a marked falling off as compared with the corresponding period of last season, when the hard coal shipments were 429,016 net tons, as compared with 354,414 tons to Nov. 1, 1895, a decrease of 64,602 tons. Soft coal shipments to Lake Superior this season were 1,859,818 tons, as compared with 2,039,046 tons to Nov. 1, 1894, a decrease of 179,228 tons.

The detailed report of the American canal is as follows:

EAST BOUND.

ITEM.	Oct. 1894.	Oct. 1895.	To Nov.1, 1894.	To Nov.1, 1895.
Copper, net tons	11,564	12,570	85,919	94,151
Corn, bushels	104,437	11,000	1,530,008	80,859
Building stone, net tons	2,325	1,002	20,295	21,919
Flour, barrels	1,504,096	1,214 343	7,235,568	7,088,838
Iron ore, net tons	863,825	784,890	6,111,148	7,359,385
Iron, pig, net tons	3,772	2,583	19,663	20,561
Lumber, M	108,274	77,263	648,643	684,371
Silver ore, net tons	.....	.....	412	100
Wheat, bushels	7,588,114	8,521,255	26,502,088	25,953,629
Unclassified freight, net tons	33,828	13,857	134,021	124,188
Passengers, number	666	384	13,397	14,858

WEST BOUND.

ITEM.	Oct. 1894.	Oct. 1895.	To Nov.1, 1894.	To Nov.1. 1895.
Coal, anthracite, net tons	66,938	77,922	429,016	335,564
Coal, bituminous, net tons	551,289	290,779	2,039,046	1,761,881
Flour, barrels	.....	.....	783	2,150
Grain, bushels	3,000	.....	10,500	35,650
Manufactured iron, net tons	7,754	7,612	28,797	63,159
Salt, barrels	31,067	36,562	174,174	214,430
Unclassified, net tons	47,977	42,895	225,215	247,508
Passengers, number	469	536	12,216	15,685

East bound freight, net tons	1,365,792
West bound freight, " "	424,765
Total " " "	1,790,557

E. S. WHEELER,
Assistant Engineer and Gen'l Superintendent.

The monthly report of Supt. J. Boyd, of the Canadians Sault Canal for the month of October and for the period since its opening, Sept. 9 to Oct. 31, inclusive, is as follows:

EAST BOUND.

	Oct. 1895	Up to Nov. 1
Iron ore, net tons	82 03	183 822
Copper, net tons	205	305
Wheat, bushels	1 530,022	2.946,985
Other grains. bushels	475,852	607 852
Lumber, ft. B. M	2 642.141	11.504.141
Flour, barrels	98,714	145 994
Stone, lime, etc., net tons	916	916
Merchandi e unclassified, net tons	817	5 516
Passengers, number	115	1 393

WEST BOUND.

	Oct. 1895	Up to Nov. 1
Coal, bituminous, net tons,	38 244	97,937
Coal, anthracite, net tons	12 050	18 850
Iron manufactured, net tons	672	1,400
Salt, barrels	1 368	4,478
Coal oil, barrels	11 797	11 797
Merchandise, unclassified, net ton	6,840	14 764
Passengers, number	56	1.133
Eastbound freight, net tons	156,753	263,638
Westbound freight, net tons	60,943	136.098
Total	217,696	399 736

J. BOYD, Superintendent.

COMMANDER LUDLOW WILL BE HEARD.

The Army and Navy Journal says: "We are informed that Secretary Herbert, after a conference with Comdr. Nicol Ludlow, has decided to appoint a board to consider his case. Comdr. Ludlow explained that the earlier interrogatories of the Navy Department covered a period when he found his executive a satisfactory officer, and that after these interrogatories were answered Lieut. Comdr. Sperry conducted himself in a manner not meeting his approval. The President or a board will again review the case in the light of Comdr. Ludlow's new statement. The first reports of Comdr. Charles S. Sperry's fitness were made while that officer held the rank of Lieutenant, and the second when he was Acting Lieutenant Commander, although he had not received the commission for this grade. It was upon these representations that the seeretary decided to appoint a board.

"The case of Commander Ludlow is one of the most interesting the Navy has had to consider in years, and it will establish a precedent. The action of the president in this case is not regarded by naval officers in the light of an invitation to frankness in expressing their opinion of officers coming up for promotion. It is a grave infringement upon the rights of an officer to discipline him because he has changed his opinion concerning another officer in the course of eight years, and has expressed that change of opinion in reply to an official demand from the Department. The fact that his statements at different times appear to conflict may raise a question as to their vaiue, but the disagreement gives no sufficient reason for accusation of infidelity to duty. There are officers in our navy who have as high a sense of duty and official responsibility as even the President of the United States, and Comdr. Nicol Ludlow is one of them. It is practically impossible to analyze the various influences that determine one man's judgment of another. He cannot do it himself, and much less another for him. As the Department invites expressions of opinion concerning officers awaiting promotion, it would seem to be best to leave such expressions entirely free, giving due consideration in determining their value to the character of the officer, making them and his previous relations to the one criticized. These expressions of opinion, not accompanied by statements of facts, should be treated as confidential communications. The present position of affairs is very awkward, not only for Commander Ludlow, but for those whose promotions are contingent upon his. The President may refuse to promote him, but he can not retire him without the recommendation of a board."

THE NEW AMERICAN LOCK.

Practically all of the machinery at the new lock has been installed. Work on all of it with the exception of the boilers has been suspended for the season. It will take but a short time in the spring to do the cleaning and fitting up to place the plant in working order. Engineer F. M. Dunlap, under whose supervision the machinery has been erected, expects to soon leave for Detroit.

J. B. Donnelly & Co. have begun work on their contract of excavating the approaches to the new lock. Dunbar & Sullivan commenced work on their contract for removing the shoal a short distance above the canal last week.

The Chandler-Dunbar Water Power Co. completed its contract for drilling the mitre sills of the new lock last Friday night.

Work on the new power house has ceased for this season. A temporary roof is being placed on the building. H. M. Strong has commenced his contract of filling back of the walls at the lower entrance to the new lock.

COMMANDER HEYERMAN DEAD.

Commander Oscar F. Heyerman, U. S. N., died suddenly at sea, October 27, on the steamer Have, bound for Dresden. He has been in failing health for several months and had obtained a year's leave of absence to go abroad and recruit his health.

Commander Heyerman had for a number of years been connected with light-house work on the lakes, with headquarters at Detroit. He was transferred, something more than two years ago, and was given command of the old steamer Kearsarge, which was wrecked on Roncador Reef about 18 months ago. This accident resulted in his suspension, and he had not been reinstated at the time of his death.

IN THE ENGINE ROOM.

PITTING IN STEAM BOILERS.

It has long been well known that very pure and soft feed water may, under certain conditions, be dangerous to boilers. The plates subjected to this form of corrosion have sometimes almost exactly conical pits, but usually the form of the pits is spherical. While this corrosion is going on the pit is filled, sometimes with a brown, sometimes with a yellow or red powder. Since the volume of this powder is greater than that of the metal from which it is derived, it forms a rounded elevation above the surface of the plate, which is often covered with a tough skin. In one case the analysis of the powder gave the following percentage composition: Oxides of iron, 86.26; water, 0.59; fats and organic substances, 6.29; calcium salts, 4.52; silica, alumina, etc., 2 34. In another case the skin had the following composition: Calcium carbonate, 38.0; magnesium carbonate, 8.7; calcium sulphate, 12.8; silica, 8.2; oxides of iron, 32.3.

The depth of the pitting varies; sometimes the corrosion quite pierces the plate. This corrosion is found generally in places where the circulation is feeble—in boilers lying idle and which have not been completely emptied; in empty boilers in connection with neighboring boilers when the stop valve is not perfectly tight, and steam even in small quantities is allowed to enter; but seldom on plates which are constantly below the water level.

Pure feed water, which has been long boiled in order to expel the disolved gases, is harmless. The experiments of Messrs. Scheurer, Kestner and Meunier-Dollfus show that the corrosion is due to the dissolved gases, of which oxygen and carbonic acid are the most prejudicial. Professor Grace-Calvert has shown that iron is not attacked by dry oxygen and carbonic acid, or by moist carbonic acid, weakly by moist oxygen, but is rapidly oxidized by a mixture of moist oxygen and carbonic acid. It seems that the greater the proportion of carbon in metal, the better it can resist this corrosion; wrought iron corrodes easier than cast iron.

Certain substances—soda, potash, borax—added to the water diminish the dangerous property. As regards the influence of the temperature of feed water, it may be mentioned that where a feed heater is used the corrosion of the feed heater is either very small or non-existent, while the boiler is nearly always free from corrosion.

A number of precautionary measures, which must be carefully attended to if pitting is to be avoided, are given at the end of the paper.—Inst. C. E., Foreign Abstracts.

HOW TO REMOVE DIRT FROM MACHINERY.

A satisfactory method of removing sticky deposits of grease and dirt from parts of machinery by means of soda lye is reported as being employed to a considerable extent in England. To 1,000 parts by weight of water, about ten or fifteen parts caustic soda and I00 parts ordinary soda is the rule. This mixture is boiled, and the parts of the machinery that are to be cleaned placed in it, this treatment having the effect of quickly loosening all grease, oil and dirt, after which the metal is thoroughly washed and dried. The action of the lye is, of course, to form with the grease soaps soluble in water; and to prevent the lubricating oil, etc., hardening upon the parts of the machinery when in use, a third part of kerosene is added.

MARINE RAILWAY AT MOBILE.

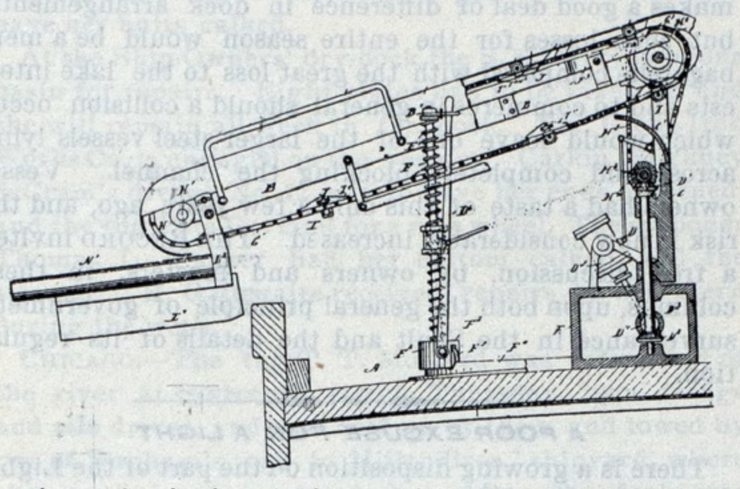
A marine railway has recently been completed at Mobile by Crandall & Son, the Boston firm of marine railway builders. The railway is designed to haul out loads of 1,800 tons deadweight, and the track and cradle are built of proportions suitable for such loads. For the present a lighter power plant is used, capable of carrying loads of 1,000 tons, but the intention is to provide the full-power plant in the not distant future. The cradle is 225 feet in length, with 20 feet auxiliary space. It is 65 feet wide, and it has at ordinary high tides 13 feet of water in the forward keel block and 16 feet aft. The tracks, which are 600 feet in length, are laid upon the four track system, resting on a foundation of piling immovable under the heaviest loads. The cradle is decked over on the principle usually adopted in connection with these railways, the deck being so arranged that there is plenty of room under a ship's floor for working, which important point is gained without any sacrifice in draught of water over keel blocks.

It is claimed for the Crandall system that it will give from one to two feet more water on blocks than the old system of open framed cradle, that is presuming the location, the length of track and cradle to be the same. Then, of course, there is the additional advantage of having a fine deck to work upon. The cradle is, in short, a traveling dry-dock, independent and complete in itself, and requiring no docks alongside. The vessels are handled entirely from a platform which extends all around the cradle, except at the after end, where the ships enter. This new railway is fitted with patent relieving bilge blocks which are regarded with great favor by dockmen.

APPARATUS FOR LIFTING FISHING NETS.

(ILLUSTRATED.)

Messrs. Ralph and Walter M. Connable, of Petoskey, Mich., have received letters patent on their device for lifting gill nets or lines, which has been mentioned in the newspapers, and which they have already had in use, having filed their application for the patent on October 19, 1894. The apparatus consists of an endless

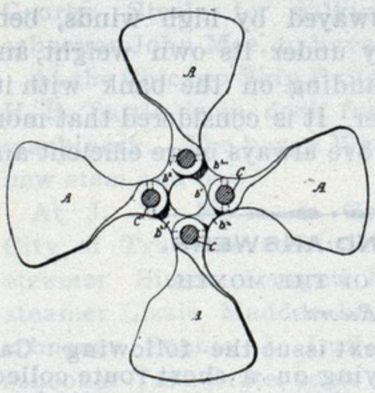


carrier and gripping device carried by the carrier, these gripping devices being normally closed, and adapted to be opened by the stress of the net, and to automatically grip the net when opened thereby, means being provided for automatically releasing the gripping devices from the net at the inboard end of the carrier. All this is mounted on a frame in which the carrier chains travel, these chains carrying and supporting slots on which the net is borne in after being gripped.

ANOTHER PROPELLER WHEEL.

(ILLUSTRATED.)

Orestes Pagan, of Philadelphia, has just patented a propeller wheel (No. 548,655) for the right to which he made application January 31. The claim is for a hollow hub with independent blades, having base sections B′ and B² and bolts passing through the base sections of the blades and through the hubsection, so arranged as to form a passage at the center of the propeller for the free escape of water. The hub



section B′ is formed to receive the shaft, and the section B² has a central opening to assist the escape of water. The sections havecurved sockets, the blades having bases adapted to these sockets. The bolts are fastened with set-screws which hold the blades firmly in place, and yet permit of easy removal.

EUGENE TOMPKINS, manager of the Boston Theatre, Boston, is building a steam yacht, at New York. Some week during the season each lady who visits the Boston Theatre will be asked to write her choice of name for the yacht on a slip of paper, with her own name and address. Mr. Tompkins will select the name from these slips, and the lady with whose idea his own is in best accord will receive either a season ticket to his theater or $100.

HARBOR improvements are the order of the day all over the world, and a great increase of international trade is evidently at hand.

OF INTEREST TO BROKERS.

A subject which is by no means exclu-ively marine, yet proposes a plan which would more greatly facilitate the business of brokers and managing owners than that of any other branch of commerce. The suggestion is to broaden the scope of the telegraph to such an extent as to lighten the tax upon the mails. The suggestion has been put forward by Mr. P. B. Delany, an inventor and electrician of high standing, to the effect that the telegraph has never been developed to its full working value, and that it is perfectly possible to extend its usefulness to such a degree as to enable it to be employed in many places where now the long delay incident to mail transmission is unavoidab'e It is h's opinion that from forty thousand to fifty thousand letters of say fifty words each could be transmitted daily betw.en Chicago and New York with profit at from twelve to fifteen cents per letter. He points out that thousands of such letters are now sent with special delivery stamps requiring twelve cents to insure merely the saving of a half hour after a journey of twenty-four hours, whereas, by Mr. Delany's plan correspondence between two such centers could easily be interchanged in an hour and the documents be delivered in cl. an typewriter print.

This plan is based on machine transmission and receiving, in which direction sufficient experience has been obtained to give ample foundation for these statements. Writing to the Electrical Engineer, Mr. Delany predicts that the machine telegraph will in the near future supplant train service for carring the bulk of correspondence, it being his opinion that the present cumbersome and slow methods of handling correspondence will not be submitted to much longer. He says: "Why should a letter of say fifty words be handled by a dozen or more people, sorted, pigeon-holed, bagged and distributed, hauled in wagons and carried in bulk by train from New York to Chicago, occupying about 25 hours' time, wh.n it can be punched on a strip of paper in two minutes, transmitted mechanically by telegraph in three seconds, typewritten in Chicago and dropped in the post office in three minutes more, or a total time of about five minutes, compared with twent-five hours by train. This can be done at an actual cost of five cents, but it can only be done by a system having these features, viz: copper wire of high conductivity, machine transmission and electro-chemical reception."

The plan suggested for a remedy is that an entirely new departure in telegraphy should be inaugurated to handle ordinary correspond nce which does not require the instantaneous transmission which is necessary with stock exchange business, and that the rate should be placed so low as to secure at once a great deal of the correspondence which now goes through the mail. His idea is to establish a central station near the general postoffice of every city, the de ivery of messages being made by means of the regular mail carriers, with provisions for special delivery by the company's messengers for a slight additional charge. Messages placed in telegraph envelopes and dropped into the regular mail collection boxes would be taken with letters to the postoffice and from there to the telegraph office for transmission. The time required for the whole operation of collection, transmission and delivery should not exceed two hours, and the cost for fifty words can, according to Mr. Delany, be reduced to fifteen cents, with an ample margin of profit to the telegraph company. This suggestion seems reasonably sure of success in practice, provided Mr. Delany's figures for the cost of transmission are to be realized. Of course, he has in mind the difficulties and the opposition which are to be encountered in the introduction of such an innovation, but the proposition on the whole looks well, and the effect of cheap telegraph rates in some of the European countries would lead to the conclusion that a vast extension of the business would follow their introduction here. It is thought by Mr. Delany that the telephone cannot be considered a competitor of the telegraph on account of the comparatively slow transmission by speech, and another disadvantage lies in the fact that there is no record produced of the conversations. There is, however, an advantage with the telephone, in that the reply is had immediately; but it is not necessary to follow Mr. Delany in his estimate of the telephone to arrive at the conclusion that cheaper telegraph rates, together with a convenient method for filing messages, such as are mentioned in his suggestions, would not only greatly facilitate the transaction of business between cities at a distance, but would also be profitable to the promoters of such a scheme.

THE MARINE RECORD

ESTABLISHED 1878.

PUBLISHED EVERY THURSDAY, AT 144 SUPERIOR ST., (LEADER BUILDING), CLEVELAND, O.

IRVING B. SMITH, CAPT. JOHN SWAINSON, } . . PROPRIETORS

BRANCH OFFICE:

CHICAGO, ILL., ... 238 Lake Street.

THOMAS WILLIAMS, Associate Editor.

SUBSCRIPTION.

One copy, one year, postage paid, . . . $2 00
One copy, one year, to foreign countries, . . $3 00
Invariably in advance.

ADVERTISING.

Rates given on application.

Entered at Cleveland Post Office as Second-class Mail Matter.

CLEVELAND, O., NOVEMBER 7, 1895.

IN another column will be found a statement of the status of Commander Nicol Ludlow's case. The Army and Navy Journal, whose comments are also printed, handles President Cleveland without gloves, and stands boldly out in defense of the Commander.

EVERY interest on the lower lakes has cause to congratulate itself on the announcement of Chief of Engineers Craighill that although a number of transfers must of a necessity be made, he has decided to allow Col. Jared A. Smith to remain in Cleveland. The Colonel has in his territory all the light-house work from Detroit to the national boundary line from the St. Lawrence River, and all the harbors between Monroe, Mich., and Conneaut, O., inclusive, and his head and heart are both in the work.

IN view of the constant victories of the Herreshoff yachts in all the international races, and the well known superiority of their hulls, the full extent of John Bull's unreasonable bitterness and jealousy is expressed in the recent editorial paragraph of the London Evening News-which is supremely indignant that Mr. Almeric Hugh Paget, an attache of the British legation at Washington, should have ordered a 27-foot two-and-a-half rater, with a fin of bronze, from the Herreshoff yards. The News closes: "The crop of attaches is abundant and we might nd better than this Yankee-smirched one."

IT is stated that Secretary Lamont, of the War Depart ment, is using his blue pencil vigorously when going over the reports of members of the Engineer Corps, especially in those portions where recommendations are made which will involve the expenditure of considerable funds. Due notice should be taken of this fact, and all the more pressure should be brought upon the representatives in Congress to prevent any of the improved propositions from being placed on the shelf. A policy of strict economy will be urged upon Congress, and appropriations of large sums run great risks of falling by the wayside or of being vetoed outright if they are not carefully looked after by those localities whose commercial interests are at stake.

THE editor of Current Literature has just discovered that large steel tonnage is built on the lakes, and is so much impressed that he writes a leading editorial on the subject. He assumes that the birth of the industry is almost as recent as his discovery, and attributes its growth to the reduction in the tariff. He should be told that the industry has kept full pace with the commerce which called it forth, and that the prices of material have had no perceptible influence. As a matter of fact, the materials used are almost exclusively of American manufacture, and the only large importation of foreign material—that of the beams and angles for the Cleveland & Buffalo Transit Co.'s new steamer—has been due to the fact that American mills were unable to turn them out with in the time required. Current Literature is a fine literary publication, and doesn't often get beyond its depth, but it should be advised to hug the shore when discussing lake subjects.

SURVEILLANCE AT THE SAULT.

As noted elsewhere there is a movement on the part of members of the Lake Carriers' Association to forestall any action of underwriters by asking the government to assume control of the movements of vessels in the St. Mary's River, such as is now in force in the St. Clair Flats Canal. This seems a part of wisdom, and while some members may object to such surveillance, it is probable the recommendation will be made, even from the standpoint of making a virtue of necessity. The distance of half a mile between vessels is considered by some too much; but if this rule were established it would insure discretion on the part of a master who might be disposed to be careless, if he were made to realize that the entire responsibility for collision would rest on him if he shortened the distance between him and the vessel ahead. Others have suggested as a compromise that Hay Lake be excepted from these regulations; but it must be urged against this that it would probably lead to vessels racing for the narrow water at each end. The best time made down the river by a fast freighter is two hours, and the time of a long tow is about four hours; so that the delay to fast steamers, under the most disadvantageous circumstances, would only be a matter of two hours. Two hours' delay, it must be admitted, often makes a good deal of difference in dock arrangements; but such losses for the entire season would be a mere bagatelle compared with the great loss to the lake interests and to commerce in general should a collision occur which would leave one of the larger steel vessels lying across and completely blocking the channel. Vessel owners had a taste of this only a few years ago, and the risk is now considerably increased. THE RECORD invites a free discussion, by owners and masters, in these columns, upon both the general principle of government surveillance in the Sault and the details of its regulation.

A POOR EXCUSE FOR A LIGHT.

There is a growing disposition on the part of the Light-House Board to do away with the flimsy iron structures so often used for inner range lights, like that at Ashtabula, which was knocked down by a dredge boom the other day, and which has been replaced by a temporary wooden structure. These are little more than a tall iron tripod with braces, to the top of which a lantern is raised on a platform after being lighted and trimmed below. There are many objections to this type in latitudes where there is much freezing weather. The lights themselves are too much exposed to varying barometric pressures, high winds, and oscillation, all of which tend to obscure the beacon. But the most serious objection is that any chance blow which will bend one of these three legs almost invariably results in the fall of the skeleton structure. It was not very long ago that one of these towers, on Detroit River, swayed by high winds, bent over so far that it gave way under its own weight, and was found one morning standing on the bank with its head, or lantern, in the water. It is considered that more expensive structnres will prove always more efficient and cheaper in the end.

QUERIES AND ANSWERS.

THE ODD DAY OF THE MONTH.

To the Editor of The Marine Record:

Please answer in your next issue the following: Can the master of a steamer plying on a short route collect pay for the extra day in the thirty-one day months?

November 3, 1895. READER.

A contract on the water is given the same consideration as on land. If you are working by the day or week the question solves itself. If you are engaged by the month you are paid from the first, or fifth or seventh of one month to the first, fifth or seventh of the month following without regard to the number of days in any one month. If you are engaged for the season the rule is of course the same, and the number of days in any particular month has no bearing upon the contract.

Chief Engineer Perry, who has been investigating the merits of the tubular boilers on the Zenith City and has reported favorably on them, and it is likely that they will be given a trial in one of the twin screw and in two of the single screw gunboats that the government is now building. The Zenith City, however, consumes, it is stated, sixty tons per trip more coal than her sister ship, the Victory, which generates steam with a Scotch-type boiler.

THE LIST OF MISHAPS.

The Wilson line steamship Missoula, which left Fort William on Thursday last with a load of grain, has not since been heard from, and there is considerable speculation as to her whereabouts. The Olympia and several tugs of the Booth line have been searching for her, but so far without avail. Capt. Thomas Wilson received word Thursday morning that the tugs, which had been wind-bound at Port Caldwell, on the north shore, for one day, would leave Thursday morning and patrol the lake north of Caribon Island, which had not yet been searched. There is no alarm about the Missoula, as it is considered that she has merely dropped her wheel or disabled her machinery and has been blown by the southwesterly winds to the eastward of her course, which is entirely out of the way of passing boats.

THE RECORD is advised by Keeper W. H. Stalker, of the light at the east end of Long Point, under date of October 28, that the schooner Algora (Br.) went ashore four miles above the light during a gale from the southwest, and is a total loss.

The steamer Owen Sound (Br.) with her consort, the S. G. Worts (Br.) is ashore five miles South of Cove Island, near the entrance to Georgian Bay, with wheat for Kingston. The boats are not insured.

While the steamer St Paul was aground at Grosse Pointe, last Thursday, the barge 107 poked her nose into the St. Paul on the port side, badly breaking the frames and deck beams opposite the boilers. Much of the deck will have to come up when temporary repairs are made.

The tug Oscar Folsom, Capt. Fred Sill, and the tug E. B. Towo, Capt. Tom Post, collided in Black River at Lorain Wednesday evening, the Toiwo being damaged $200 worth. Her engineer, Wm Johnson, of Rockport, was badly scalded.

Whaleback barge 118, in tow of the Mather, struck the steamer Business at Grosse Pointe. The Business rested on the bottom, and examination at Detroit showed her wheat cargo was not damaged. She will repair at Detroit before proceeding.

The steamer Rochester and schooner Mosher came together near Chichago. A full account of the collision will be found in our Chicago letter.

The Moonlight and Kent have finally been abandoned by the wreckers where they rest on the south shore of Lake Superior near the mouth of the Chocolay river. Grummond's lost about $7,000 in their two attempts to get the boats off, and Inman lost about half that amount, some of his tugs having narrow escapes into the bargain. The wrecking operation proved of no avail, as the shifting quicksands filled up the channels as fast as they could be dredged out. The schooners are steadily settling in the sand.

FLOTSAM AND JETSAM.

The Detroit River mail boat will be kept in service so long as there are vessels to deliver mail to.

Commander Sigsbee, of the Hydrographic Office, in his annual report, recommends the extension of the lake service in his department, and the establishment of branch offices at Duluth and Sault Ste. Marie.

Hammond's Bay people resent the charge that the schooner Lady Franklin was stripped by pirates. They say the mate stripped the wreck, sold what he could, and left the remainder with D. G. Finlayson, as security for money loaned.

The Langstaff-Orm Manufacturing Co., a prominent mill and lumber company at Paducah, Ky., have placed an order with the Marine Iron Works, Chicago, for one of their small but powerful steam towing launches which that company make a specialty of building for the lumber trade.

The American Wrecking and Salvage Company has filed articles of incorporation with a capital stock of $50,000. The incorporators are City Treasurer C. W. Milbrath, Assistant City Clerk E. H. Vivian and George G. Campbell. The company has the control of apparatus by which wrecks can be raised from a depth of 1,000 feet.—Milwaukee Journal.

Under authority of the act of Congress providing for a joint Canadian and United States commission to inquire into and report on the feasibility of establishing deep water ways between the Great Lakes and the Atlantic ocean, President Cleveland has appointed James B. Angell, of Michigan, John E. Russell, of Massachusetts, and Lyman G. Cooley, of Illinois, as American commissioners.

SHIP BUILDING AND REPAIRS.

BUILDING IN CONTEMPLATION.

The Flint & Pere Marquette Railroad Co., has asked several builders to submit proposals on a steel car ferry steamer 350 feet in length by 56 feet beam, with capacity for 25 or 30 cars. The builders have been requested to file their bids as expeditiously as possible in order that no time may be lost in awarding the contract, which will be settled in about two weeks. The road has been forced to add this boat to the equipment to take care of increasing trade, particularly the ever growing traffic in structural iron, which cannot be unloaded from cars on one side of Lake Michigan and reloaded on cars except at an expense which more than wipes out the freight revenue. The number of large buildings in the Northwest into which steel enters is increasing annually, and with car ferry competition, the F. & P. M., has considered it advisable to be prepared to handle anything that comes along.

Mr. John Gordon, who recently resigned his position as general manager of the Northern Steamship Co., and who has, it is said, sold most of his interest in the Union Transit Co., to W. J. Connors, was in Detroit last week looking for dock facilities which immediately precipitated a report that he was about to inaugurate a line of steamers to operate between Detroit and Buffalo, stopping at Cleveland. His actions had the effect, so Detroit papers say, of giving a bad scare to managers of lines with which he would, on the above hypothesis, come into direct competition, and these managers are quoted with remarks which would insure some very attractive rates on Lake Erie, if such a line were to be projected. It should be remembered, however, that Mr. Gordon was not born yesterday, and that he has too high a standing among business men to warrant a suspicion that he contemplated any movement which did not insure a fair return. Mr. Gordon has evidently been looking over the ground with a view to ascertaining just what can be done in certain lines, with a view to giving positive information to capitalists with whom he may be associated. THE RECORD is not at liberty to state at present just what Mr. Gordon's plans are, but the project will come before the public in good time and will show that the craft of any new company that may be organized under his direction will be able to float on the same lakes as those of hypothetical competitors without spilling very much water over the edges of the inland seas, particularly at this low stage of water.

Mr. James Ash, of Buffalo, is still making figures with shipbuilders It is not certain that he will build, as he may decide to buy, instead. But those who predicted that he had abandoned the lake business prove to have been mistaken.

Capt. James Davidson, of West Bay City, has laid the keel for another of his large wooden schooners, 300 feet in length. He will build four of these, the largest wooden sailing vessels on the lakes. At the same time he is ready to take care of any outside contracts, and may be heard from before long.

Rumor has it that John Craig & Sons are figuring with a syndicate which wants to build a steel steamer of Welland Canal size. The matter of building a new steamer for the Toledo-Monroe route is still under consideration by Capt. Arthur E. Klauser and other owners of the steamer Dove. J. B. Dewey & Sons, who own the steamer Starling, which plied on this route last year, are also considering the matter of a new boat.

The only boat placed in the water during the past week was the tug F. J. Haynes, for the Thompson Line, which was launched by the Jenks Ship Building Co., at Port Huron, Monday.

Capt. Alex M. Dougall estimates, it is said, the cost of getting the whaleback passenger steamer Christopher Columbus to tide water to be $30,000. She would have to be cut in two nearly amidships to get her through the Welland. This work would be done at West Superior, and upon her arrival at Kingston, the after end would have to be cut in two to get her to Montreal. In this way the engines and boilers would remain in the middle compartment. The capitalists down East who contemplate her purchase will have the winter months to study over the matter.

A party of Eastern capitalists who are interested in the Lake Superior Power Co., have organized, it is stated, to build a dry-dock at Sault Ste. Marie, Mich. The dock will be a record breaker in point of size.

The following was received this morning from the offices of the Goodrich Transportation Co.:

To the Editor of The Marine Record:

The S. S. Atlanta of the Goodrich Transportation Co. goes into Manitowoc dry-dock, next month, for an entire new after body below the main deck, not "bustle," as stated in your article in last issue. She will have the old frames taken out and have new lines from amidships aft, the design for same being prepared by the Goodrich Transportation Co. The vessel draws too much water aft for the present state of Muskegon harbor, and the new after body, with the extra displacement, will lesson her draft considerably, more especially as the old framing will be all taken out. Yours truly,

W. J. WOOD, N. A.

Chicago, Nov. 6, 1895.

GENERAL REPAIR WORK.

The steamer La Salle has been in the Cleveland dry-dock since Tuesday, and will probably remain there until Saturday. She is getting a rudder and shaft from the Cleveland Ship Building Co. The Garden City was in from Saturday till Monday to get a new shoe and have her butts calked.

At the Ship Owners' dry-dock the S. S. Curry is in one basin for repairs. Eight plates had to be taken off and she will remain all week in the dock. The Globe Iron Works Co. is engaged on the repairs. Carkin, Stickney & Cram's dredge No. 12 is in to have her ends fastened, and the tug Pete Gorman for a new wheel. The schooner Thomas L. Parker had her bottom calked, and the steamer J. H. Oathwaite received repairs to her stern during the week.

CHICAGO.—The tug T. T. Morford was raised out of the river at Sixteenth street, Thursday, by a dredge and pile driver, and was held up by them and towed by two of Dunham's tugs to Miller Bros.' shipyard, where she was placed in dry-dock. After the dock was pumped out it was found that in addition to the extensive damage done to her hull above water, there is a large hole on the port side, next the keel, about 4 feet wide, extending from the stem about two-thirds of her length. Her keel and keelson are also broken. It is the intention of the Dunham Towing and Wrecking Co. to rebuild the Morford and give her a new and larger boiler. The boiler of the Morford which was blown into halves and converted into a shapeless mass by the explosion, was raised from the bottom of the river on Friday.

At Miller Bros.' shipyard, the steamer George T. Burroughs was in dock for some new planking, some bottom calking, and repairs to rudder; the schooner George Steele for calking bottom and butts; the schooner John Mee, to have some leaks stopped.

At the Chicago Ship Building Co.'s yard the steamer H. B. Tuttle is in dock for repairs to her bottom and machinery. The barge Wayne will go into dock for a new stem and bow.

At J. B. Bates & Co.'s shipyard the steamer City of Traverse received some general repairs; the steamer Simon Langell had her decks calked; the steamer Lizzie Madden had some general repairs; the schooner Sophia J. Luff, a new anchor stock; the schooner York State, some deck calking and repairs to steering gear; the schooner H. C. Winslow, some new outside plank; steamer Ionia, repairs to cabin and deck; steamer Elfin Mere, top sides calked; steamer St. Lawrence, some deck calking; steamer Jay Gould, general repairs; schooner S. A. Wood, a new foretop mast; steamer D. C. Whitney, repairs to stern and quarter; steamer Peerless, general repairs and calking. The schooner yacht Hawthorne is laid up at the yard for general repairs; the schooner Granger received a new main boom; the steamer City of Duluth some general repairs.

DETROIT.—The steamer Fryer finally got into Clark's dry-dock last Thursday. H. W. Oades, of Detroit, and William Watterson, of Cleveland, held the survey on her, which was completed last Saturday, and which fixes the damages at about $23,000. About 100 men are employed in repairing her, and eight weeks will expire before she is out of the dock.

The Corsica went into the Detroit dry-dock. One bottom and two keel plates were needed.

At Oades' yard the schooner John Breden was pulled out to receive a new rudder. The schooner Bay City is getting a general overhauling.

BUFFALO.—The Simon J. Murphy left dry-dock Monday night. The damage she had sustained from striking Ballard's Reef amounted to five damaged plates and five broken frames. Repairs were also made to the wooden sheathing on her bottom. The steamer John Craig went into Mills' dock Wednesday to repair damages caused by the same reef. The barge Knapp has been getting some calking at the Union dry-dock.

WEST SUPERIOR.—Preparations are being made by the American Steel Barge Co. to winter at West Superior this season the largest fleet of vessels which ever congregated at the head of the lake. Every whaleback which can possibly be brought in before the final freeze up will anchor in Howard's pocket, off the barge works, for general repairs and overhauling during the several months of enforced idleness.

REPAIR NOTES.

The Port Huron tug Ash has been dismantled, and her machinery is being put in the new tug being built on Black River.

The Grummond tug Swain released the steam-barge Hall at Thessalon, Ont., yesterday afternoon, and she will remain at Meldrum Bay a day or two patching. Then she will be taken either to Collingwood or Port Huron to go into dry-dock.

NOTICE TO MARINERS.

CHART OF MOHAWK BAY.

Advance copies of the Hydrographic Office chart of Mohawk Bay, Lake Erie, have just been received. The information from which this chart has been made is exceedingly meagre in detail, and it is the desire of the office that the opinions of the masters familiar with that portion of Lake Erie be gotten, so that it may be determined whether or not it is advisable to issue the chart generally. Captains are requested to call and inspect this chart at the branch Hydrographic office, No. 912, the Arcade, Cleveland, O.

LAKE ERIE BUOYS.

The buoys of the district will be taken up and replaced with winter buoys on or about the following dates: Those at Dunkirk, about November 8; at Erie, including gas buoy, November 18; Sandusky and island buoys, November 20; Maumee Bay, November 23; Detroit River, December 1.

The light ships at Ballard Reef, Limekiln Crossing and Bar Point will be left in position as late as circumstances will permit, probably between December 5 and 10. The position of the latter vessels will be marked by a black buoy.

Waverly Shoal buoy and the buoys in Niagara River will be kept in position as late as the season will allow.

DEEP WATER AT GROSSE POINTE.

When there was so much grounding at Grosse Pointe last week Lieut. Cavanaugh, who for the present fills the vacancy caused by Gen. Poe's death, arranged with Col. Kallman, of the Engineer Corps, U. S. A., to temporarily mark the lower half of the new deep water channel through Lake St. Clair, which has been completed, with twelve buoys flying red flags and lights and placed 2,000 feet apart. A number of vessels got around the shoal water in the old channel at Grosse Pointe in this way, but on Sunday night the lights were extinguished, it having been found that the water at Grosse Pointe was as deep as at Ballard's Reef in Detroit River. The channel is still marked for daylight navigation.

NOTES FOR NAVIGATORS.

The new fog signals at Eagle Harbor and Portage Entry will be finished this season.

Masters of deep laden vessels are warned to be cautious in entering Milwaukee harbor during easterly storm. Capt. John Driscoll, of the night tug Simpson, says that on a straight course the depth is ample, but a little to the northward not over 15 feet of water in a moderate sea.

By order of the Lake Carriers' Association, Capt. Andrew Hackett, of Amherstburg, has pleased a black spar buoy on Milwaukee shoal at the head of Bois Blanc Island, where the Curry fetched up lately. Two white lights are shown from the buoy at night. Boats should pass midway between this bnoy and the red light now shown on the east bank.

A buoy has been placed on the shoal southeast of the Point au Pelee dummy. The Bartlett stuck there last week.

U. S. DREDGE STEAMER GEN. C. B. COMSTOCK.

In October, 1894, a contract was entered into by the Bucyrus Steam Shovel and Dredge Co., of South Milwaukee, Wis., to build a hydraulic dredging steamer for the harbor improvement works at Galveston, Tex. The works now being carried out there, under the supervision of Major A. M. Miller, of the U. S. Engineer Corps, have for their object the creation of a deep water port, and one of the first and principal necessities was the deepening of the bar which obstructs the entrance to the bay on which the city of Galveston is situated. For a long time this bar has restricted the draft of water of vessels entering the harbor to 10 or 13 feet. The formation is a very fine, hard, white sand, and a considerable improvement has been effected by the construction of jetties, so that the ebb and flow of the tide between the jetties helps to create and maintain a deep channel. The action of the tides, however, was insufficient to accomplish the result, and in order to hasten the work it became necessary to dredge the bar. The dredging of ocean bars presents a set of conditions entirely different from those met with in ordinary dredging, and a special type of dredging vessel has been developed to meet these conditions. Owing to the exposed situation and the consequent necessity of working in considerable sea-way, it is impracticable to use anchorages of any kind, or to load the material into scows along side. The type of dredge, therefore, becomes a self-propelling hopper steamer, equipped with centrifugal dredging pumps, which pump the sand from the bar while the vessel is being slowly steamed over it; the sand being received into the hoppers in the hold of the vessel and discharged at sea through valves in the bottom.

The steamer Gen. C. B. Comstock is one of the latest and most complete examples of a vessel of this type, and her trial performance shows that she is capable of very high results. The hull is of wood, 177 feet long over all, 35 feet 6 inches beam, 16 feet depth of hold, and the two hoppers have a collective capacity of 500 cubic yards when filled to level of main deck. They can, however, be filled considerably higher than this, as they are surrounded by a coaming 33 inches high.

The propelling engines drive the vessel at a speed of ten miles per hour when light and eight miles per hour when loaded. Steam is furnished by two marine boilers 10 feet in diameter by 11 feet 6 inches long, each boiler having two Fox Corrugated Furnaces. Immediately forward of the boilers is the pump room. Here are located two independent centrifugal dredging pumps each driven by compound, direct connected engines of 125 horse-power. Each pump has 15-inch suction and discharge and is specially designed to withstand the abrasion and wear of the sand for the greatest length of time, and to give freedom of flow through the passages. The blades of the runner are of steel and are removable through a man-hole in the casing. There is a thrust bearing on the shaft of the multiple collar type, and an intercepting pressure chamber provides for the exclusion of the sand from pump shaft bearings. The cranks are balanced and the engine runs smoothly and steadily at 200 revolutions, but in ordinary work the speed is about 185 revolutions.

The suction pipe enters through the side of the boat just above the load water line. There is a heavy flanged socket casting fitted into the side of the vessel which receives the swivel elbow of the suction pipe. This elbow is a steel casting and has sufficient length of bearing in the socket to hold it in place and take the entire strain of the suction pipe without any additional support. The stuffing box for the elbow is inside the boat and easy of access from the pump room. The suction pipe is 50 feet long in two sections and made of wrought iron welded tubing. There are two flexible connections in the pipe to permit freedom of movement in a sea way under all conditions. The drag at the lower end of the suction pipe is of cast iron and so arranged that if it should encounter any immovable obstruction it will raise up and pass over it automatically without unduly straining the suction pipe. The suction pipes are suspended on each side from two steam cranes with wire rope hoisting tackle, by means of which they are readily raised or lowered to the required depth. A spring indicator on the crane shows the tension of the ropes and the degree of pressure of the drag upon the bottom. The drag is furnished with removable steel cutting blades.

From the pumps the discharge is carried forward over the hoppers in two large troughs which have openings or slides at suitable intervals so that the material can be properly distributed in the hoppers. The discharge of the pumps consists of a mixture of sand and water, the percentage of sand varying from 10 to 40 according to circumstances. The water overflows from the hoppers through suitable openings, passing over the deck, while the sand precipitates in the hoppers. During the trial the hoppers were filled with water only in 4½ minutes with both pumps running. This is equal to a capacity of 11,000 gallons per minute for each pump. The time occupied in opening the valves and discharging the load is 7½ minutes.

The vessel is equipped with "Providence" steam windlass; "Chase" steam steering gear; "Westinghouse" electric light system; "Huntington" search lights; and a full equipment of everything that goes to make up a sea-going vessel. The crews' and officers' quarters are ample and commodious and constructed over the hoppers, and specially designed for warm climate. Pilot-house and bridge are placed forward. There are two masts, each fitted with derrick booms arranged for handling the suction pipes and all her own machinery. Complete awnings are provided over both forward and after deck.

The propelling engines are by the Neafie & Levy Co., of Philadelphia, and the hull was built at the yards of Hugh Ramsay, Perth Amboy, N. J. The vessel was built from the designs of A. W. Robinson, M. Am Soc. C. E., who also designed the pumps, pumping engines and dredging equipment and which were built at the works of his company at South Milwaukee, Wisconsin.

AUDIBILITY OF FOG SIGNALS.

The North Pacific Pilot Chart for September contains additional interesting instances where fog signals have failed to be heard, even when it was absolutely certain that the signals were blown:

"The navigating officer of the U. S. S. Marblehead reports to the Hydrographic Office that the fog bell at the Needles, Isle of Wight, England, is unreliable, on account of its sound being muffled by the cliffs at that point. At 1 p. m., May 26, 1895, that vessel, in company with the U. S. flagship San Francisco, anchored during a dense fog 2.4 miles S. by E. ½ E. from Needles Point without having heard the fog bell, the sea being smooth, with light airs from south-east. About 5.30 p. m., with light easterly airs and smooth sea, the fog bell was distinctly heard. Mr. W. A. E. Critchley, of the British steamer Catalonia, Captain John James Atkins, reports to the Hydrographic Office under date of East Boston, Mass., Aug. 4, 1895, that at 11:20 a. m., local time, on July 16, that vessel passed within 500 yards of the lightship at Daunt Rock, south coast of Ireland, during the prevalence of a fog. The officers of the Catalonia noted the smoke of the fog gun, which was discharged several times while the lightship was in sight, but were unable to hear report of the same until at a distance of one mile and a half or more, when it was distinctly audible. At the time the wind was from W. S. W., with a force of 2, Beaufort scale, temperature of the air 59, and of the water 59. The report states that cases similar to the one noted often occur at Daunt Rock."

The merchant navies of the world are deeply indebted to the United States Hydrographic Office, says the New York Maritime Register, and officers co-operating are also to be congratulated on the fact that the new North Pacific PilotChart information on inaudibility of fog signals confirmed the master of the Polyphemus, which took the ground near Hong Kong last April in thick fog. The court had the pilot chart before it, and the judgment was in agreement therewith."

ADDITIONS TO INLAND LLOYDS.

Manager Dan McLeod, of the Inland Lloyds Vessel Register, did not issue any supplement regarding enrollments during October. Only two names were added, the Katahdin, registering 1,103 tons net, built by the Wheeler Co. at West Bay City, belonging to McCormick and others, of Bay City, valued at $110,000, and rating A1, and the Simon J. Murphy, built at the same yard, and a duplicate of the Katahdin in tonnage, valuation and rating, but owned by the Murphy Lumber Co., and hailing from Preble. The steam-barge E. B. Hale has her valuation entered as $30,000, and her rating as A2, having received considerable repairs.

A POWERFUL SUCTION DREDGE.

One of the most powerful pumping dredges afloat, says Transport, has just been launched complete by Messrs. Wm. Simons & Co., Limited, of Renfrew. She is named the Octopus, and was constructed to the order of the agent general for Natal for the port of Durban. The vessel has a hopper capacity for 1,300 tons of dredgings, is constructed to Lloyd's highest class, and is specially strong for the exceptional character of the work she has to do. The hull is divided into nine watertight compartments by means of bulkheads extending up to the main deck, and the principal dimensions are: Length, 215 ft.; breadth, 36 ft. 6 in.; and depth, 15 ft. 9 in. The centrifugal sand pumps, two in number, are fitted at forward end of hopper in a separate compartment. They are capable of raising 3,000 tons of sand per hour, and working to a depth of 40 ft. under water level. They are driven by two sets of independent triple-expansion engines. The pumps are capable of discharging on shore a distance of 3,000 ft. through pipes. Provision is also made by which the dredgings can be discharged into barges alongside. The large main suction pipe is fitted in a central well in a fore part of the vessel, and is controlled by means of powerful hydraulic gear fitted on the upper deck. This pipe is attached to the hull of the dredger by a novel arrangement of swiveling gear and special flexible joint for preventing damage when at work in exposed places, the lower end of the suction pipe being so arranged that it has a working radius of 25 ft. without moving the vessel. The pipe can be lifted in a very speedy manner when required. Arrangements are also provided for working one or both pumps when required. The propelling engines are two sets of the triple-expansion type of 1,250 i. h. p., driving twin propellers with a speed of 9½ knots per hour. The diameter of the cylinders is as follows: High pressure 15½ in.; intermediate, 24½ in.; low pressure, 39 in.; and stroke 24 in. Steam is supplied by two steel boilers constructed to Board of Trade and Lloyd's requirements for a working pressure of 160 lbs. per square inch. The hopper doors are worked by hydraulic power. At the bow a powerful steam winch is fitted for working the anchors and cables, besides which there are steam capstans forward and aft to work the mooring chains. Special attention has been given to the ventilation of the cabins, and separate accommodation has been provided for the native portion of the crew. The vessel is fitted with a complete electric light installation.

A CORRECTION.

In last week's issue we inadvertently referred to the L. W. Ferdinand Co. as located in New York. The company has a large establishment at No. 267 Federal St., and Nos. 25 to 29 East St., Boston, Mass., with boat ware-rooms at No. 307 Federal street.

VISIBLE SUPPLY OF GRAIN.

As compiled for THE MARINE RECORD by George F. Stone, Secretary Chicago Board of Trade, November 2, 1895.

CITIES WHERE STORED.	WHEAT. Bushels.	CORN. Bushels.	OATS. Bushels.	RYE. Bushels.	BARLEY. Bushels.
Albany	.....	10,000	85 000	.....	20 000
Baltimore	560 000	341 000	211,000	82 000	.....
Boston	436,000	155 000	5.000	.....	.....
Buffalo	1,866,000	358,000	88,000	280 000	1.066,000
" afloat	.....	.....	.....	.....	.....
Chicago	18 601 000	1.102 000	404 000	211,000	104 000
" afloat	.....	.....	.....	.....	.....
Cincinnati	45,000	12 000	51.000	41,000	129 000
Detroit	495.000	32.000	37.000	14,000	2,000
" afloat	.....	.....	.....	.....	.....
Duluth and Superior	5.568.000	.....	232 000	92 000	678,000
" " afloat	.....	.....	.....	.....	.....
Indianapolis	127 000	12 000	.....	.....	.....
Kansas City	1 287 000	5.000	64,000	19.300	.....
Milwaukee	557 000	.....	14 000	5 000	155,000
" afloat	.....	.....	.....	.....	.....
Minneapolis	12 969 000	.....	416,000	77 000	171,000
Montreal	312 000	.....	32 000	3 000	12,000
New York	4,400 000	514 000	1,141,000	25 000	.....
" afloat	154 000	.....	.....	.....	.....
Oswego	34 000	50 000	.....	.....	86 000
Peoria	103 000	23.000	427 000	4 000	2 000
Philadelphia	242.000	115 000	281 000	.....	.....
St. Louis	1,100 000	47 000	554 000	17 000	4,000
" afloat	.....	16 000	.....	.....	.....
Toledo	980 000	183 000	226,000	141.000	.....
" afloat	.....	.....	.....	.....	.....
Toronto	99,000	.....	11.000	.....	8 000
On Canal	832 000	241 000	126 000	.....	381,000
On Lakes	2,223 000	1.638 000	550 000	.....	535 000
On Mississippi	.....	.....	44,000	.....	.....
Grand Total	52 990.000	4 854,000	4 999.000	1,064 000	3,373,000
Corresponding date 1894	80,027,000	2 658,000	9 373.000	444,000	3 810.000

THE NEW BATTLE SHIPS.

The Navy Department is about to advertise for proposals on the sea-going coast line battleships Nos. 5 and 6, provided for by an appropriation of the act making naval appropriations for the current fiscal year, each ship to cost not more than $4,000,000 each, exclusive of armament. One of these is to be built on the Pacific coast, if the bids are deemed desirable. The proposals will be received in the usual way, on specifications prepared by the Navy Department, and on others to be prepared by the builders. The government's specifications provide for the following dimensions :

Length on load-water line, normal displacement	368 ft.
Molded breadth at load-water line	72 ft.
Mean draft at normal displacement	23 ft. 6 in.
Normal displacement (about)	11,500 tons.
Total coal capacity, loose stowage	1,219 tons.
Coal carried at normal displacement	410 tons.

If, on trial, the average speed shall equal or exceed 16 knots per hour for four consecutive hours, the vessel will be accepted, so far as speed is concerned. If the vessel makes only 15 knots, she will be accepted at a reduced cost of $100,000.

It is contemplated to drive the vessel by twin screws. The engines will be of the vertical triple-expansion type, two in number, in separate compartments. The boilers will be of the cylindrical, double-ended pattern, three in number, and two single ended boilers, to be placed in four compartments. The weight of the propelling machinery, including water and stores, should not exceed 1,100 tons.

The hull is to be of steel, not sheathed, with double bottom, and close water-tight subdivision. The arrangement of the decks above water must provide ample freeboard and berthing accommodations. Two military masts with fighting tops will be carried. The boats must be stowed clear of the blast of the guns, but two life-boats are to be carried as to be rapidly lowered under all conditions of weather.

The protection of the hull against injury to the water line region is to be afforded by means of a side armor belt of a maximum thickness of not less than 15 inches, and a mean depth of 7 feet 6 inches. The belt will extend at least from the stem to the after barbette, and to maintain the maximum thickness throughout the engine and boiler spaces; from thence forward it may be tapered gradually to a thickness of 4 inches. The transverse armor at the after end of the belt, and just forward of the boiler, will be not less than 8 inches thick. Barbettes for 13-inch guns will have armor not less than 15 inches thick, except in the rear, where it will be reduced to 12 inches. The turret port plates will be 17 inches thick, the balance of the armor plating 15 inches thick. The ship's side, from the armor plating to the main deck, will be protected by not less than 5 inches of steel armor, from barbette to barbette. Coal is to be carried back of a portion of this 5-inch casemate armor.

An armored deck is to extend throughout the length of the vessel. Where this steel deck is worked flat the thickness will not be less than 2¾ inches, and where worked with inclined sides the thickness of the slopes will be 3 inches. A cellulose belt is to be fitted along the sides, the whole length of the vessel. A conning tower of not less than 10 inches in thickness, having an armored communication tube not less than 7 inches in thickness, will be carried in a suitable commanding position, the tube extending to the armored deck and affording protection to the voice tubes, bell wires, etc.

The 8-inch guns will be superposed on the 13-inch turrets, and the armor will not be less than 11 inches thick on the port plates, and 9 inches elsewhere. In the wake of the 5-inch guns on the main deck is to be continuous armor 6 inches thick, extending between the turrets. Further protection is afforded by splinter bulkheads between the guns, 2 inches thick, extending from deck to deck. Protection is afforded the smaller guns by shields and extra side-plating.

The torpedo outfit will consist of five torpedo tubes, eight torpedoes, and suitable allowance of gun cotton for mines and miscellaneous purposes. Two torpedo tubes will be placed on each broadside and one in the bow.

Provisions and small stores are to be carried for three months. Distilling apparatus and evaporators will be fitted for fresh water supply, the allowance of water to be carried to be sufficient for 15 days. Clothing, contingent, and small stores to be carried in sufficient for the service of the ship for one year. The ships must be constructed within three years.

MARINE RECORD Life Savers' Series.

CAPTAIN TELESFORD BOUTIN.

(ILLUSTRATED.)

The Milwaukee life-saving station, one of the most important and arduous posts on Lake Michigan, is in charge of a man only thirty-three years of age, but one who has seen much trying service, and who has participated in a number of heroic rescues. Capt. Boutin was born at Kewaunee, Wis., and remained until he was eleven years old with his parents, his father being engaged in fishing on Lakes Michigan and Superior. At this age he was left to shift for himself, but continued to follow the lakes as a sailor and fisherman. At the age of twenty he went to Chicago and made his home there for three years. Soon after leaving Chicago he entered the life-saving service by signing articles as surfman at the Sturgeon Bay Canal station in 1886. He continued as surfman until 1891, when he was appointed keeper of that station, remaining there until about June, 1894, when he was transferred to the Milwaukee station to fill the vacancy caused by the removal of Keeper Pratton, the reasons for which were quoted at length from Gen. Supt. Kimball's report in last week's issue.

Capt. Boutin's habits have always been of the sober kind, and he will not permit any member of his crew to

CAPT. TELESFORD BOUTIN.

use intoxicants. One of his most remarkable exploits occurred January 25 last, when thirty men were in a perilous position at the intake crib of the Milwaukee waterworks when a violent storm arose. The crew was of course not in service, but Keeper Boutin organized a crew of volunteers. During the work of launching the boat he sprained his ankle, but he insisted on conducting the expedition, and conducted the heroic rescue of every one of the thirty from what seemed immediate death. When at Sturgeon Bay Canal he afforded signal assistance to the steamer Ann Arbor No. 1, for which the late Capt. Edward Kelley publicly thanked him and his crew through the columns of THE RECORD. Capt. Boutin is of an ingenious turn and is the inventor of a beach apparatus, which has been adopted by the service.

WHERE IS WILLIAM L. HANCE?

Mr. John H. Knight, of Ashland, is very desirous of finding William L. Hance, if he is living. The latter lived at Ashland in the latter part of the 50's. Afterward he followed the lakes for a livelihood, and was a wheelsman the last Mr. Knight heard of him. Anyone knowing anything of his whereabouts, if alive, or his fate, if not among the living, will confer a favor by writing to Mr. Knight at Ashland, Capt. Thomas Wilson, Cleveland, or THE MARINE RECORD.

SHIPBUILDING ON THE COAST.

Kelley, Spear & Co., the Bath shipbuilders, are conferring with New York parties regarding the construction of a vessel which can be used for carrying freight during the greater part of the year and serve for pleasure cruising during the summer months. The craft will be schooner rigged, carrying four masts and designed for fast sailing. The hull above the water line will somewhat resemble a whaleback steamer, with a sort of cockpit, with sharp end, such as are used on the top of a racing shell to protect the deck. Between decks the craft will be fitted up like a yacht, handsome cabins and staterooms occupying this space. The lower hold will be devoted to freight. While the vessel is engaged in freight carrying the "tween decks" will be kept closed and undisturbed. The craft will be 200 feet long, 40 feet beam, and 25 feet deep. Her lower hold will be divided into five watertight compartments and she will be exceptionally strong, and will be available for ocean service. Complete she will cost about $100,000, about twice what an ordinary schooner of like tonnage would cost.

Lewis Nixon & Co., of Elizabethport, N. J., have been commissioned to build one of the finest steam yachts afloat for Peter A. B. Widener. She will be 225 feet over all, 183 feet on the water line, 28 feet beam and 12 feet draft. She will be schooner rigged and will be driven by double-expansion engines of 1,300-horse power, with cylinders 18 27 and 42 inches in diameter and 28-inch stroke. There will be a number of auxiliary engines which will operate the electric light plant, refrigerating apparatus, steam laundry, etc. The boat will be built of steel and will be finished in hard woods. The upholstery and hangings will be of silk and leather. In addition to the owner's quarters, which will be aft on the upper deck, there will be accommodations for 25 guests. The forecastle will have accommodations for a crew of 21 men. Among the new features will be a continuous deck house 137 feet long instead of the usual forward and aft cabins.

The Southern Railway Company has contracted with the William Cramp Ship & Engine Building Company for a steel passenger steamer to ply between Norfolk and Baltimore. The contract has been signed and work will be started at once in purchasing steel and iron and laying the keel. The new vessel will be 242 feet long and 42 feet beam and will have accommodations for a hundred passengers. She will also have a large cargo space and modern improvements of all kinds in machinery.

A SHIP NOT A SHIP.

The editor of Fairplay says : "Some time ago in consequence of an attempt of the Board of Trade to pass an unusually *bizarre* piece of legislation, I was constrained to ask the question, 'When is a ship not a ship?' and the obvious answer in the light of that proposed legislation was 'When she is a factory.' Of course, on that, those who will have the kernel out of the nut had to ascertain when she was a factory, and the answer to that conundrum was easily found. When a ship was in the stream or in the middle of the dock she continued to be a ship and subject to the laws, rules and regulations that apply to ships. When she was moored alongside a quay to discharge or load she became a factory, and subject to factory legislation, involving factory inspection. In the United States I see by THE MARINE RECORD that a ship is not a ship when she becomes a warehouse, and she becomes a warehouse under circumstances best set out by the following short report of an action. (J. H. Norton et al vs. The schooner Richard Winslow.) I wonder what ships will eventually be? They have long been treated as coffins; then they become factories; now they are werehouses. In a short time they will perhaps be promoted to the rank of museums of curiosities. They have always been subject to the ravages of the barnacle, both of the marine species and of the more destructive mollusc that is to be found in the neighborhood of Whitehall gardens. It speaks volumes for the tenacity of our shipowners that, what with attacks from within and without, fanciful legislation, and general denunciation, a single ship remains afloat. In fact, many would not have continued in existence but for the doubtful blessing of the single-ship company, as no private individual could possibly face the risks imposed on him."

THE MARINE RECORD is the headquarters for marine publications of every description. No. 144 Superior St.

NEWS AROUND THE LAKES.

CLEVELAND.

The many friends of Capt. Henry J. Johnson will sympathize with him in his heavy loss by fire at Green Springs last Sunday morning, when the Oak Ridge Sanitarium was completely destroyed. The origin of the fire is unknown. The loss was $50,000, with insurance of but $10,000. The hotel will be immediately rebuilt, and Manager Cobb says will be open for next season.

Hanna & Co. have cleared away the old ramshackle structure that stood between their fine warehouse building and the Northern Steamship Co.'s dock on River street, and will put up a substantial and ornamental brick warehouse there. The dock frontage, of about 100 feet, is also being put in first-class shape.

Capt. Murch, of the Northern King, will remove his family from Cleveland to Superior this winter and take up his residence there. As so many of the Northern Line boats are to be repaired at that port this winter, it looks as though Capt. Murch would look after it.

The tug yacht Eugene A. Galvin, with the owner, Capt. Michael Carr, in command, is on her way to New Orleans. She left Buffalo two weeks ago, but has been compelled to seek shelter in several ports. He expects to enter the Ohio Canal here, and to go to Dresden, where he will enter the Muskingum River, going to the Ohio River at Marietta. If he does not sell the boat by the time he reaches New Orleans, he will go to Galveston by the Gulf and operate her between the city and the breakwater. The Galvin was built at Rochester, N. Y., in 1888, and her home port is Buffalo. She measures 14.87 tons gross, and is 35.7 feet long, by 9.8 feet beam, and 3.8 feet deep. The crew consists of Capt. Carr, an engineer and a deck-hand.

Capt. and Mrs. George Stone celebrated their golden wedding anniversary at their home in East Cleveland. A large number of their old friends called to express congratulations and good wishes for the future, and many handsome tokens of regard were left with them. Capt. Stone, although he retired some years ago, is still well known as a lake navigator. He is largely interested in several boats of the Bradley fleet.

Congressmen-elect Burton and Beach made a trip through the harbor Wednesday on the U. S. tug Swansea, accompanied by Col. Jared A. Smith, of the Engineer Corps, U. S. A., and Assistant Engineer W. T. Blunt, who showed them on the ground just what was designed for this port, as already outlined by municipal committees and the Chamber of Commerce. The breakwater and both piers were found in a condition which requires immediate attention. It is estimated that the west pier, which is on its last legs, and which it will be impossible to repair, can be replaced by a new one about 100 feet to the westward and to extend to the Old River bed at a cost of about $155,000, this sum providing for a concrete pier on a crib foundation, 1,550 feet long and 25 feet wide. It is proposed to tear up the east pier to three feet below the mean water level and to build a solid concrete structure at a cost of $30,000. The ravages of the heavy seas are very noticeable on the west breakwater and Col. Smith says that with a further outlay of $150,000 he can save this very expensive structure, which is now rapidly deteriorating. The improvement contemplated is concrete superstructure with stone sheeting. The two Congressmen were impressed with the great need of securing a government appropriation and if the city secures authority to bond itself for $1,000,000 to be expended in improving the inner harbor, this action will have a tendency to secure more ready co-operation on the part of Congress. Others of the party who went out were Mayor McKisson and President of Council Reynolds representing the city; H. D. Goulder and Capt. George B. McKay representing the Lake Carriers' Association; Lee McBride and D. C. Taylor, representing the Chamber of Commerce; Major W. B. Stockman, local forecast official; D. C. McIntyre, of the Detroit & Cleveland Steam Navigation Co., and newspaper representatives.

CHICAGO.

Special Correspondence to The Marine Record.

The schooner Mosher, light, bound down Lake Michigan and the steamer Rochester bound to Chicago were in collision Thursday night about nine o'clock off the Marine Hospital. The jibboom of the schooner struck the steamer on the port bow, even with the spar deck, carrying away the jibboom of the schooner and breaking the rail and part of the deck of the steamer. Then the schooner's bowsprit struck the steamer a few feet farther aft. The bowsprit was carried away to the knightheads, after knocking a hole through the side of the steamer between deck. Then they came together again and the schooner got her stem and bow crushed in against the side of the steamer just aft of the forward gangway. The Rochester came along to Chicago and the Mosher came to anchor and was afterwards towed into this port by the tug Perfection. The damage to the schooner will not be much less than $2,000. Captain Green, of the Mosher, claims that the Rochester was to blame, as she could have been kept out of the way of the schooner. The moon was about at the full at the time of the accident.

The owners of the steamer Soo City have presented a bill to the Goodrich Transportation Co., for $5,000 for salvage for assisting their steamer Atlanta into Grand Haven when she was disabled by the breaking of her shaft in September last.

The Independent Tug Line have purchased the tug C. N. Charnley from Nau Bros., of Green Bay. She is a first class tug, having a 24x30 high pressure engine and an 8½x14 foot steel boiler, which is allowed 135 pounds pressure. The purchase price was $8,500.

The barge Zapotec, coal laden, when going up Chicago River about 3 o'clock Monday morning in tow of a tug, got aground on the LaSalle street tunnel and remained there until nearly five o'clock in the evening, when she was released by the Independent Line tugs Dickinson, Hall and Dalton after a portion of her cargo had been lightered. The barge was drawing only about 14 feet of water, but got out of the channel too far toward the South side of the river.

The steamer Soo City, Capt. Michael Driscoll, left Chicago Saturday night for Holland on her last trip this season. She will go into winter quarters at the latter port.

The body of John Erickson, fireman on the Morford, has not been recovered. Capt. John Cullinan, of the Morford, is out of the County Hospital, and is feeling pretty good, after his recent narrow escape.

Several of the lumber fleet captains of this port wish to express their approval of the efficient manner in which the light-house keeper at Bailey's Harbor keeps the range light burning.

BUFFALO.

Special Correspondence to The Marine Record.

Major Ernest H. Ruffner, who was transferred from Buffalo, was not sent to Portland, Ore., as announced, but has been stationed at Baltimore, where he has charge of two important districts.

Harvey Cutting has been appointed superintendent of the City elevator, to succeed the late Wallace Prouty. Mr. Cutting was formerly assistant superintendent.

Charles C. Haile, who has been connected with the Northern Steamship Co., for some time, has been appointed cashier of the line, in place of T. D. McCarthy, who resigned to accept a position with F. F. Henry, Buffalo agent of the Washburn-Crosby Company of Minneapolis. Mr. Haile was with the Western New York & Pennsylvania Railroad for a number of years, and is a son of Conductor Hod Haile of that road.

Grain receipts at this port during October aggregate 20,077,590 bushels; flour included as grain, 26,965,940 bushels. Total receipts for the season up to date are: Grain, 84,586,310 bushels and flour included as grain, 116,549,810 bushels. Receipts of flour up to November 1 were over 2,500,000 barrels less than last year, but grain receipts exceed those of 1894 by 1,100,000 bushels. Iron ore, the king of freights, has been coming forward quite freely to this port. During 1894 the receipts were 395,339 tons. Receipts up to date this year foot up 409,247 tons. Receipts of lumber exceed last year's to Nov. 1, by 14,000,000 feet, but the movement of shingles has fallen off considerably.

SAULT STE. MARIE.

Special Correspondence to The Marine Record.

Gen. Supt. E. S. Wheeler, of St. Mary's Falls Canal, received a summary of the freight tonnage on German and French inland waterways from Hon. Th. Hoech, an attache of the German embassy at Washington, this week. From it is learned that on the Rhine River up and down, there passed the German frontier in 1893, 6,797,334 gross tons. Berlin received and shipped by water 5,020,619 gross tons, and the freight carried on all of Germany's inland waterways amounted to 27,917,252 gross tons that year. The French rivers and canals carried 25,200,000 tons in 1891. This is a large showing when the size of those countries is taken into consideration, but is only a little over double the volume of traffic that passed through the St. Mary's Falls Canal alone in 1893, which amounted to 12,092,161 gross tons, and less than double the commerce of 1894, which was 14,779,363 gross tons.

Harvey C. Beeson, publisher of Beeson's Inland Marine Directory, is in the city this week soliciting orders for his directory. No merchant who sells goods to steamboat men should fail to have his card in the new edition for the season of 1896, as everything points to a big season for the Sault, as far as the number of craft going through the canal is concerned.

The tug Brockway met with a serious accident near Point Iroquois early Friday morning while working on the stranded steamer Nelile Torrent. The tug got a tow line entaugled in her wheel and at the time there was a heavy sea running. She swamped and sank in 20 feet of water. No lives were lost. Preparations are now under way to raise her.

DULUTH AND SUPERIOR.

Special Correspondence to The Marine Record.

The lumber mills of the Duluth district have not accomplished a big year's work. The total cut approximates 325,000,000 for the entire district. The bulk of this lumber has found a market in the east via the lake route. The approximate cut of some of the outside firms and Duluth as a whole is as follows:

C. N. Nelson Lumber Co., Cloquet, 44,000,000; Johnson, Wentworth & Co., Cloquet, 12,000,000; Cloquet Lumber Co., Cloquet, 30,000,000; Payne & Co., Carlton, 6,000,000; D. H. Moon & Co., on Mesaba road, 10,000,000; W. T. Bailey & Co., on Mesaba road, 6,000,000; Knox Lumber Co., on Iron Range road, 16,000,000; On Rainy river, 23,000,000; Duluth mills, 178,000,000. Total, 325,000,000.

The receipts of the season of soft coal at the head of the lakes are as follows: Superior 571,328 tons; Duluth, 266,890 tons, according to the figures given by the agent of the Northern Coal Storage Co. The total receipts for last season were 550,410 tons of soft coal. The shortage is estimated to be 75,000 tons.

Capt. Hector McLeod, who has been master of the tug Abbott ever since it passed into the hands of Capt. W. H. Singer, has severed his connection with that line. He is making a trip on the steamer Fred Kelley, and will then go to Boston, where, with three companions, he will fit out a boat and go to a certain island in the West Indies, in search of a million dollars' worth of Spanish silver. Two years ago the party went tither, and located the island to a nicety according to a bey or chart which Capt. McLeod possesses, but they were unable to dig for the treasure because of several hundred men who were digging guano off the island. The plunder, it is said, was buried there by pirates.

John P. Gordon, agent of the Union Transit Co. at Duluth, has resigned, and Lansing R. Robinson, agent at St. Paul and Minneapolis for the Northern line, has been appointed to succeed him.

IN THE ADMIRALTY COURTS.

Judge Swan will be called upon to decide who was to blame for the collision of the tug Torrent with the towline between the steamer Sitka and her consort, the Yukon, which resulted in the loss of three lives. The suit is an action against the Sitka, brought by Mrs. Kinrie, administratrix of the estate of David Kinrie, (called Canary at the time of the accident) asking $10,000 damages. It is the contention of the libelant that the Sitka was going at a high speed, and that the sheering of her consort was caused by the speed, rather than any thing else. It is also contended that when it became evident that the Torrent would have to cross the bows of the Yukon to avoid certain collision, the tow line should have been cut, and that this would have been done if either the crew of the Yukon or Sitka had been competent or if there had been capable men on watch.

Judge Nelson, of the Federal court at Duluth, has overruled the petition and protest of Oliver Patenard, master of the Canadian steamer Arabian, in the case of the Marine Insurance Co., against the steamer named. The defendant requested the court to decline to entertain jurisdiction in the action, and that the Arabian be discharged from custody and the libel dismissed. Judge Nelson denies the petition in all respects.

The Eddy Transportation Co., owners of the steamer Penobscot, libeled the Centurion and her cargo for $20,000 salvage for aid in getting off the Centurion at Isle Royale. It is claimed that the work was done at great hazard to the Penobscot.

The American Steel Barge Co. has brought suit against the Ashtabula Harbor Tug Association to recover $1,250, the amount of damages done to the City of Genoa by the Hoyt, which was in tow of the tug Sunol. The accident occurred in May or June, 1894. The case will be heard on the second Monday in December, in Cleveland.

TWO COMPLIMENTARY LETTERS.

We print below two very complimentary letters recently received by the MacKinnon Manufacturing Co., of Bay City, in regard to wheels on the steamer Ossifrage and tug Petrel. The Ossifrage is now on the St. Mary's River Line, and the Petrel is the tug that was supposed to have been overwhelmed in a recent gale, but which turned up after having been missing almost a week:

MACKINNON MFG. CO., Bay City, Mich:

Gentlemen: Replying to yours of September 11th, we have no fault whatever to find with the propeller wheel which you furnished us for the tug Petrel; but on the contrary find it extremely satisfactory, as this boat when towing develops with your wheel more power than any boat we have ever known of this size. We are, Very truly yours,

THE H. M. LOUD & SONS' LUMBER CO.

Au Sable, Mich., Oct. 30.

MACKINNON MFG CO., City:

Gentlemen: The propeller wheel you furnished us for the steamer Ossifrage a short time ago is giving very good results indeed. We have increased our speed materially and accomplish it with less turns. We have used other makes of wheels and say your wheel is superior to any we have used. Yours very truly,

B. ARMSTRONG, Captain.
J. A. BRAMAN, Chief Engineer.

Bay City, Mich., Sept. 25, 1895.

WILLIAM L. BROWN, President.

WALTER F. COBB, Vice President and Treasurer.

W. I. BABCOCK, Manager.
O. R. SINCLAIR, Secretary and Asst. Treas.

Chicago Ship Building Co.

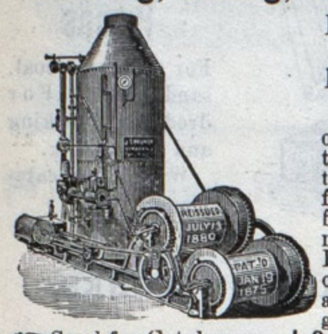
STEEL SHIPBUILDERS and DRY DOCK PROPRIETORS,

DRY DOCK AND YARDS: 101st Street and Calumet River.

LONG DISTANCE TELEPHONES: SHIP YARD & DRY DOCK OFFICE, "SOUTH CHICAGO 40." CHICAGO OFFICE, 1013 ROOKERY, "MAIN 3447."

Station S, CHICAGO, ILL.

Hoisting, Mining, Bridge Erecting,

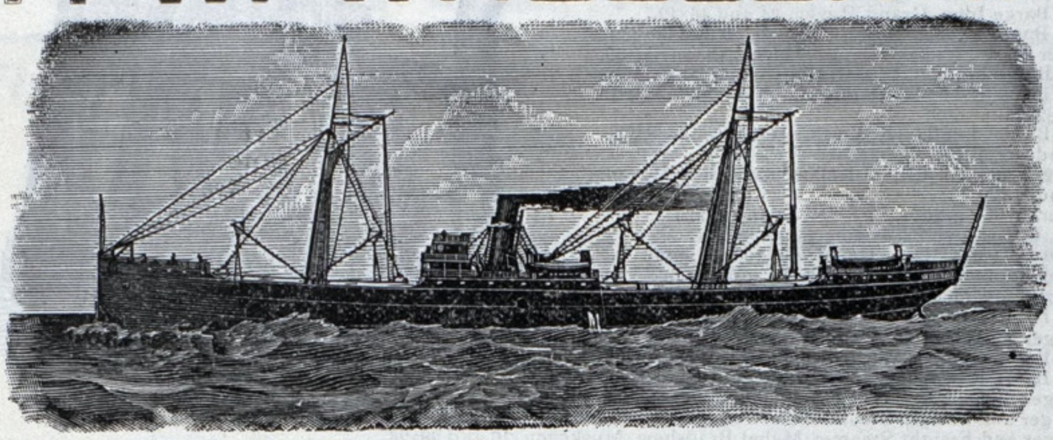


Dock Build'g, Pile Driving, Coal Hoisting and Quarry Engines

of any power, sugar cane transferring engines, transferring machines for depositing cane from car to carrier, with my improved Patent Friction Drums, with or without Boilers. Any amount of reference given. Established 1870.

Send for Catalogue. J. S. MUNDY, Newark, N. J.
1741 Market St., Philadelphia, Pa.
22 Light St., Baltimore, Md.
117 Water St., Pittsburgh, Pa.
249 South Jefferson St., Chicago, Ill.
715 North Second St., St. Louis, Mo.
39 Magazine St., New Orleans, La.
34 Fremont St., San Francisco, Cal.
85 Front St., Portland, Oregon.
Fourth & Wakouta Sts., St. Paul, Minn.
218 Congress St., Boston, Mass.

F. W. WHEELER & COMPANY.,



BUILDERS OF ALL KINDS OF

IRON, STEEL AND WOODEN SHIPS,

FOR LAKE OR OCEAN SERVICE.

West Bay City, Mich.

F. W. WHEELER, Prest. E. T. CARRINGTON, V.-Prest
C. W. STIVER, Secretary & Treasurer.

FRONTIER IRON WORKS,

MARINE ENGINES,

DETROIT, MICH.

INCORPORATED 1794.

Insurance Company of North America.

CAPITAL, PAID UP IN CASH,	-	$3,000,000.00.
ASSETS, - - - -	-	9,562,599.92.

CHARLES PLATT, President.
EUGENE L. ELLISON, 2d Vice President.
WILLIAM A. PLATT, Vice President.
GREVILLE E. FRYER, Sec'y and Treas.
JOHN H. ATWOOD, Assistant Secretary.

Lake Marine Department.

GEORGE L. McCURDY, MANAGER, CHICAGO, ILL.

MARINE AND INLAND INSURANCE.

Atlantic Mutual Insurance Co.,

Organized 1842. Office 51 Wall Street, NEW YORK.

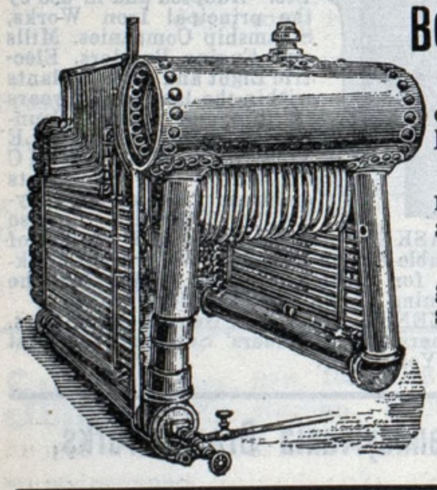
Insures against Marine and Inland Transportation Risks and Issues Policies making Loss Payable in England.

Assets over $10,000,000 for the Security or its Policies.

The profits of the Company revert to the assured, and are divided annually upon the premiums terminated during the year; thereby reducing the cost of insurance. For such dividends, certificates are issued bearing interest until ordered to be redeemed, in accordance with the charter.

J. D. JONES, Pres. W. H. H. MOORE, Vice Pres. A. A. RAVEN, 2d Vice Pres. J. H. CHAPMAN, Sec.

Boyer's Patent Sectional Water Tube Boilers



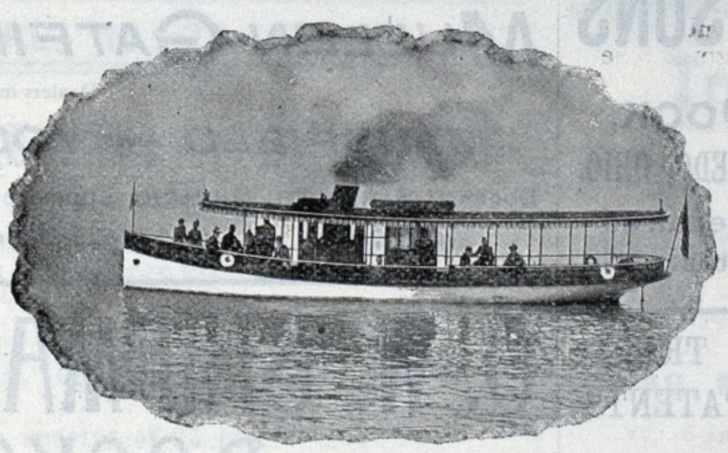
These rapid Steaming Boilers require less room, occupy less space in width, height and length; weigh less than any other.

Have short, perfect circulation, no dead ends, no joints in the fire, and any engineer can get at all parts of it.

The Steam Yacht "Rex," having 25 square feet grate surface and 1000 square feet heating surface, steamed 144 miles on 1000 lbs. of coal.

Address:

L. BOYER'S SONS,
90 Wall St., New York City.



Marine Iron Works,

Clybourn & Southport Aves.,

CHICAGO.

BUILDERS OF

STEAM YACHTS,
MARINE ENGINES,
MARINE BOILERS.

Write for List of Boats for Sale.

MARINE VALVE OIL — FOR INTERNAL LUBRICATION.

RENOWN ENGINE OIL — FOR EXTERNAL LUBRICATION.

Marine Valve, Renown Engine, Eldorado Engine, Crank Case, Victor Signal, Dark Lubricating, Mineral Seal, Head Light, Arctic Cup Greases, and Lard Oils,

—CARRIED IN STOCK AT THE—

Standard Oil Company's Marine Depot,

TELEPHONE 77. 123 River Street, CLEVELAND, O. MAIN OFFICE TELEPHONE 682.

ALSO FOR SALE BY **STANDARD OIL CO.,**

Chicago, Ill., No. 5 Wabash Ave.
Racine, Wis.
Milwaukee, Wis., Broadway & Mason.
Sheboygan, Wis.
Manitowoc, Wis.
Green Bay, Wis.
Marinette, Wis.
Oshkosh, Wis.
Duluth, Minn.
West Superior, Wis.
Hancock, Mich.
Marquette, Mich.
Buffalo, N. Y.
Sault Ste. Marie, Mich.
West Bay City, Mich., M. C. Ry. & 10th St.
Saginaw, Mich., Eighth & Sears Sts.
Detroit, Mich., 46 Jefferson.
Toledo, O., Summit & Monroe Sts.

Atlantic Refining Company, French & 16th Sts., Erie, Pa.
D. Robeson, Port Huron, Mich.
W. S. McKinnon, Ashtabula Harbor, O.
Hull & Rand, Huron, O.
Edward Brammall, Benton Harbor, Mich.
Baby & Dale, St. Clair, Mich.
N. C. Alten, Lorain, O.
A. F. Harrington, Conneaut Harbor, O.
A. H. McGonagil, South Chicago, Ill.
Marine Supply Co., Fairport, O.
F. Kranz, Sandusky, O.
The M. I. Wilcox Cordage & Supply Company, Toledo, O.

MARINE ENGINEERING

(Stationary and Locomotive Engineering), Electricity, Architectural and Mechanical Drawing, Plumbing, Heating, Mining, English Branches, etc.

TAUGHT BY MAIL.

Engineers can qualify to obtain licenses. To enroll only necessary to know how to read and write. Circular free. State subject you wish to study.

The International Correspondence Schools, SCRANTON, PA.

Walter H. Oades' Shipyard,

MARINE RAILWAY AND SHEERS,

Ship Carpenters, Calkers & Joiners.

Working on reasonable terms.

Yard: Foot of Dubois Street, DETROIT.

Telephone 1670, 3 rings.

ABRAM SMITH. ANGUS H. SMITH.

ABRAM SMITH & SON,

SHIP-BUILDERS,

ALGONAC, MICH.

Wooden Ships of any description built, rebuilt, or repaired.

Send for specifications, prices, etc.
Good slips for laying up boats.

A. J. MORSE & SON.

DIVING APPARATUS

140 CONGRESS ST. BOSTON.

A. GILMORE & SONS

TOLEDO DRY DOCK.

Telephone No. 157, TOLEDO, OHIO.

Vessels Docked and Repaired at Reasonable Rates.

PATENTS, CAVEATS, TRADE-MARKS, DESIGN PATENTS COPYRIGHTS, Etc.

CORRESPONDENCE SOLICITED.

John A. Saul, Atlantic Building, Washington, D. C.

ROBERT E. HILLS,

STEAM FITTING AND HEATING

Wrought Iron Pipe and Fittings, Engineers' Supplies; General Jobbing Work Done Promptly.

Also Proprietor of North Side Iron Works.

57 & 59 North Wells St. CHICAGO, ILL.

ESTABLISHED 1871. INCORPORATED 1893.

MONTAGUE IRON WORKS CO.,

MANUFACTURERS OF

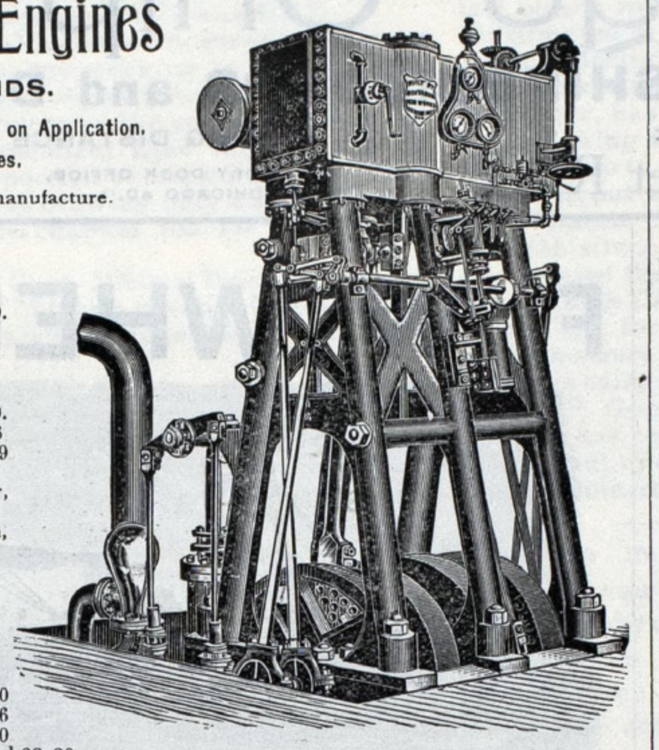
Marine and Stationary Engines

AND BOILERS OF ALL KINDS.

MONTAGUE, MICH.

Heavy Castings a Specialty. Prices Quoted on Application.

Fore and Aft Compound Marine Engines.

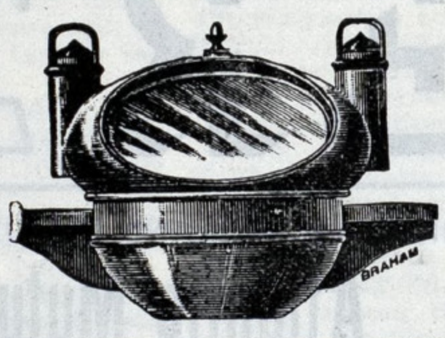


The Engines in the following boats are of our manufacture.

Tug, Hunter, Chicago, 15 and 28x22.
Tug, Tacoma, Chicago, 16 and 30x24.
Tug, Zenith, Duluth, 18 and 36x30.
Steamer Glenn, South Haven, 14 and 28x20.
U. S Survey Steamer, W. S. Hancock 12 and 21x20.
Steamer Pine Lake, Charlevoix, 16 and 30x24.
Passenger Steamer Pilgrim, St. Clair, 14 and 28x20.
Steam Barge Iona, Grand Haven, 24 and 46x42.
Steam Barge M. T. Greene, Chicago, 20 and 36x36.
Steamer H. W. Williams, South Haven, 18 and 36x30.
Steam Barge Mark B. Covell, Manistee, 18 and 30x26
Steam Barge Isabella J. Boyce, Michigan City, 19 and 32x26.
Steam Barge Luella H. Worthington, Cedar River, 19 and 36x30.
Passenger Steamer City of Kalamazoo, South Haven, 20 and 40x30.
Steamer Oval Agitator, Chicago, 14 and 28x20.
Tug E. G. Crosby, Muskegon, 16 and 30x24.
Tug Peter Coates, Sault Ste. Marie, 10 and 20x16
Steamer Lorain L, South Haven, 12 and 21x16.
Passenger Steamer Lotus, Escanaba, 16 and 30x24.
Steam Barge Sachem, Grand Haven, 21 and 38x36.
Passenger Steamer Bon Ami, Saugatuck, 14 and 28x20
Steam Barge Charles A. Street, Chicago, 20 and 36x36
Steam Barge Edward Buckley, Manistee, 18 and 36x30
Passenger Steamer E. G. Maxwell, Pentwater, 14 and 28x20.
Passenger and Freight Steamer Bon Voyage, Saugatuck, 16 and 30x26.
Passenger and Freight Steamer Mabel Bradshaw, Muskegon, 16 and 28x26.

The engraving represents our 20 and 36x36 Fore and Aft Compound Marine Engine. We build them all sizes and guarantee them to give satisfaction. Prices furnished on application.

MONTAGUE IRON WORKS CO., Montague, Mich.



FRANK MORRISON, COMPASS ADJUSTER

AND MANUFACTURER OF

NAUTICAL INSTRUMENTS.

COMPASSES. BAROMETERS, PATENT LOGS, BINNACLES, STEAM GAUGES, MARINE GLASSES, ENGINE INDICATORS,

All Nautical Instruments Carefully Repaired.

Office with Upson, Walton & Co., 161 River St., Cleveland, O.

THE CUDDY-MULLEN COAL COMPANY

DEALERS IN COAL.

Docks at Government Pier, Whiskey Island, and Adjoining Globe Dry Dock.

All fully equipped with Revolving Derricks; also, Lighter Carrying Derrick, and One Hundred Two and One-Half Ton Buckets.

Main Office, 81 Perkins Building, East Side of Main Street Bridge.
Dock Office, 127 West River St., Cleveland, Ohio. Telephone No. 8.

Boats Coaled Day and Night. Docks at Amherstburg and Sandwich, Ontario

---

MULLEN-GATFIELD COAL CO.,

Dealers in the Celebrated

MANSFIELD AND YOUGHIOGHENY COALS.

Docks at SANDWICH, ONTARIO, opposite the Fort at Detroit, with chutes for rapid fueling. Elevated docks and derrick at AMHERSTBURG, ONTARIO.

O. W. SHIPMAN DOCKS.

AMHERSTBURG, ONT.

Four Chutes and Low Dock.

Massillon and KOAL Youghiogheny Hocking . . .

Main Office, 90 Griswold St., DETROIT.

TREGURTHA SAFETY WATER-TUBE BOILERS

Single, Compound and Triple Expansion Engines.

STEAM YACHTS AND LAUNCHES.

New and Second-Hand Launches in Stock.

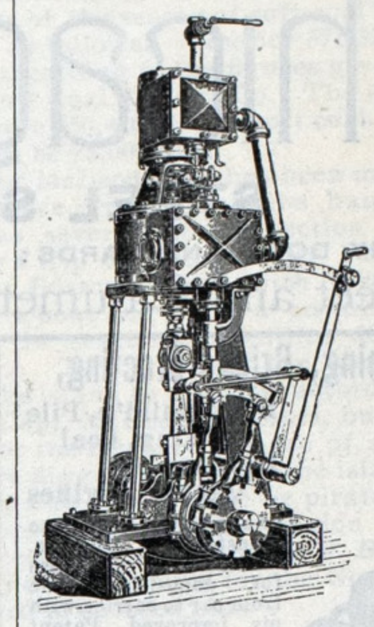
MURRAY & TREGURTHA,

West First Street, foot of F Street,

SOUTH BOSTON, MASS.

Send three 2c. stamps for Catalogue.

MARINE ENGINES



SINGLE AND COMPOUND.

5 TO 200 HORSE-POWER. These engines are high-class in workmanship and material and moderate in price.

Send for cuts, description and prices.

Centrifugal Pumps

For raising coal, sand, &c. For dredging, wrecking and circulating.

Write for catalogue.

MORRIS MACHINE WORKS,

Baldwinsville, N. Y.

HENION & HUBBELL, Agents,

61-69 North Jefferson St., Chicago, Ill.

Baker's Quadruple Grip Anchor

PATENTED.

AGENTS WANTED.

Watertown Brass & Mfg. Co.,

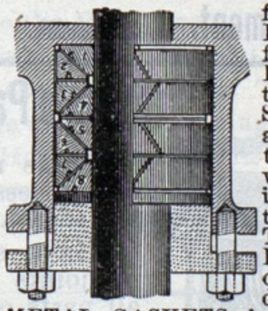
WATERTOWN, N. Y.

Send Stamp for Catalogue.

Mfrs. Yacht, Boat and Canoe Hardware.
Special Work a Specialty.
Boat Rails, Stanchions, Etc.

MENTION THIS PAPER.

Katzenstein Self-Acting Metal Packing



for Piston Rods, Valve Stems, Etc., of every description, for Steam Engines, Pumps, Etc. Adopted and in use by the principal Iron Works, Steamship Companies, Mills and Engine Builders, Electric Light and Power Plants within the last twelve years in this and foreign Countries. Also FLEXIBLE TUBULAR METALLIC PACKING for Slip-Joints on Steam Pipes and for Hydraulic Pressure. Also METAL GASKETS for all sizes and shapes of flanges. Double-Acting Balanced Water-tight Bulkhead Doors for Steamers. Also Agents for the McColl-Cumming Patent Liquid Rudder Brake.

L. KATZENSTEIN & CO., General Machinists, Brass Finishers and Engineers' Supplies, 357 West Street, New York, N.Y.

The Pennsylvania Brass Works,

ERIE, PA.

Automatic Piston or Mocking Bird Whistles. Special Whistles made to order. Penna. Steam Flue Cleaner. Water Gages, Penna. Gage Cocks, Air Cocks, Oil Cups, Brass and Bronze Castings a Specialty.

E. G. ASHLEY,

CHOICE FAMILY GROCERIES.

ALSO ALL KINDS OF

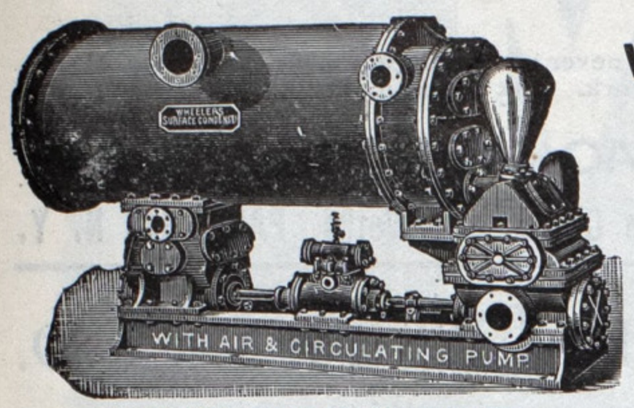
Fresh, Salt and Smoked Meats.

Vessel orders attended to day and night. Goods delivered by Steam Yacht "Maggie D."

36 & 38 Summit Street. TOLEDO, O

Wheeler Condenser & Engineering Co.,

39 & 41 CORTLANDT STREET, NEW YORK.



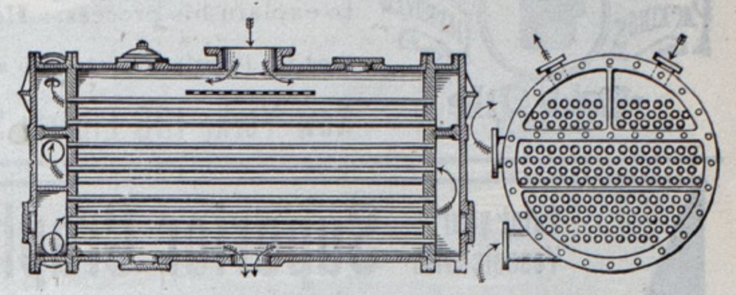
WHEELER SURFACE CONDENSER,
Mounted on Combined Air and Circulating Pumps.

WHEELER'S IMPROVED SURFACE CONDENSERS

Mounted upon Combined Air and Circulating Pumps.

Sole Proprietors and Manufacturers of the
WHEELER STANDARD SURFACE CONDENSER.
WHEELER ADMIRALTY SURFACE CONDENSER.
WHEELER LIGHT HALL SURFACE CONDENSER.
VOLZ PATENT COMBINED SURFACE CONDENSER AND FEED-WATER HEATER.
WHEELER FEED-WATER HEATER, AIR AND CIRCULATING PUMPS.
EDMISTON PATENT FEED WATER FILTER.

Send for Pamphlet, "Machinery for Small Boats, etc."



PATENT COMBINED SURFACE CONDENSER AND FEED-WATER HEATER.

P. M. CHURCH & CO.

SAULT STE. MARIE, MICH.,

Ship Chandlery, Hardware, Paints, Oils,

And all classes of

VESSEL SUPPLIES.

Coppersmith Shop in connection.

Corner Portage and Ashmun Sts.

TELEPHONES: { OFFICE NO. 7. RESIDENCE NO. 4.

D. & C.

The Detroit & Cleveland Steam Nav. Co.

Daily except Sunday, for Detroit, Bay City, Saginaw, Grand Rapids, and all Michigan points, at 10:00 P. M.

For Mackinac, Alpena, Petoskey, Soo, and all way ports, Saturdays and Thursdays, 10:00 P. M.

Season of navigation closes about December 1st, 1895.

A. A SCHANTZ, G. P. A., DETROIT, MICH.
D. C. McINTYRE, G. F & D. P. A., CLEVELAND, O.
J. C. MENGENSDORF, C. P. A.

Subscribe now for THE MARINE RECORD. $1.00 will pay for six months, $2.00 for one year, including all supplements.

THE CHASE MACHINE COMPANY,

MACHINISTS, ENGINEERS AND BLACKSMITHS.

MANUFACTURERS OF

Land & Marine Engines & Steam Pumps,

SOLE OWNERS AND MANUFACTURERS OF THE

CHASE AUTOMATIC FOG WHISTLE MACHINE,

IN USE ON NEARLY ALL LAKE STEAMERS.

Agents for ASBESTOS STEAM, BOILER AND PIPE COVERING.

Telephone 994. **111 Elm Street, CLEVELAND, O.**

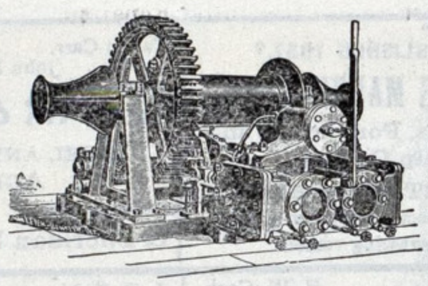
J. H. OWEN, Prest., Chicago. F. H. VAN CLEVE, Sec'y, Escanaba. Capt. GEO. BARTLEY, Supt., Escanaba.

ESCANABA TOWING & WRECKING CO., Escanaba, Mich.

Tugs, Lighters, Steam Pumps, Hawsers, Hydraulic Jacks and Diving Appliances always ready.

TUG MONARCH—Engine Compound, Cylinder 16 & 30 in. diameter, 30 in. Stroke, Steam Pressure allowed, 125 lbs.
TUG DELTA—Cylinder 20 by 22. Steam Pressure allowed, 105 lbs.
TUG OWEN—Cylinder 20 by 20, Steam Pressure allowed, 104 lbs.

CENTRIFUGAL PUMPS. SEVEN AND FOURTEEN INCH SUCTION.



DECK AND DOCK HOISTS

Our Hoists will be found on the following boats: Tugs—Superior, Sumner, Sweepstakes, Winslow, J. K. Emmett, Acme, Mockingbird, Waldo Avery, Reliance, John Owen, Charlton, Howard, Duncan City, Chamberlain, Balize, Sampson, Westover, Gladiator, W. B. Castile, Home Rule, Robert Weideman, Boscobel and Peter Smith; Propellers—Metamora, Abercom, Penobscot, J. J. McWilliams, I. W. Stephenson, John W. Pauly; Barges—Jenness, Noquebay, Mantanee. Also in use by F. W. Wheeler & Co., W. B. City, Mich., Blood and Hart, Marine City, Mich., Michigan Salt Works, Marine City, Doty Bros,, Pile Drivers, Toronto, Canada.

MARINE IRON CO., - - - - BAY CITY, MICH.

ELEGANT PHOTOGRAVURE, 16 x 22 INCHES

OF

REPRESENTATIVE LAKE BUILT TONNAGE.

NINE SHIPYARDS REPRESENTED.

"NORTH WEST," Globe Iron Works Co. "MANITOU," Chicago Shipbuilding Co.
"CHRISTOPHER COLUMBUS," American Steel Barge Co.
"CITY OF TOLEDO," Craig Shipbuilding Co.
"MERCHANT," David Bell Engine Works.
"CITY OF ALPENA," Detroit Dry Dock Co.
"CENTURION," F. W. Wheeler Co. "ALVA," Cleveland Shipbuilding Co.
"CHEMUNG," Union Dry Dock Co.

Mailed to any address on receipt of 35 cts.

SMITH & SWAINSON, Leader Building, - - CLEVELAND, O.

Cleveland & Buffalo Transit Company.

$2.50 **CLEVELAND TO BUFFALO.**

VIA "C. & B. LINE."

MAGNIFICENT SIDE-WHEEL STEEL STEAMER

"STATE OF OHIO."

TIME TABLE.

Leaves Cleveland 6 p. m Central Standard Time,
Mondays, Wednesdays and Fridays.

Leaves Buffalo 7 30 p. m. Eastern Standard Time,
Tuesdays, Thursdays and Saturdays.

Take the "C & B. Line" steamers and enjoy a refreshing night's rest when enroute to **Buffalo, Niagara Falls, Toronto, New York, Boston, Albany, 1000 Islands** or any Eastern or Canadian point.

Send 4 cents postage for tourist pamphlet.

W. F. HERMAN, Gen'l Pass. Agent. T. F. NEWMAN, Gen'l Manager.
CLEVELAND, O.

Now under construction for this Company the largest side-wheel steamer on the Great Lakes, unsurpassed for speed and elegance, will be ready to go into commission April, 1896.

FRANKLIN HOUSE

Corner Bates and Larned sts., only a block from Woodward and Jefferson aves.
DETROIT, MICH.
The house has been **thoroughly renovated** and is in the heart of the city, convenient to all car lines, depots and boat landings.
Per Day. $1.50. **H. H. JAMES.**

North Atlantic Trident Line.

DIRECT SERVICE

Between Philadelphia and London.

For rates, etc , apply to

CHAS. M. TAYLOR'S SONS,

15, 16 and 17 Merchants' Exchange.
PHILIP W. RICHARDSON,
3 Fen Court, Lodnon, E. C

LOOK OUT FOR . . .

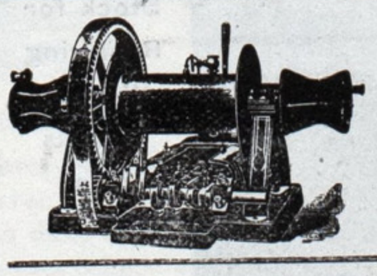
GRAHAM'S COAL DOCK,

Foot of Twenty-first Street, DETROIT, MICH.

All modern facilities for quick dispatch.
Widest point on River.
No interference from Car or Ferry Boats.

JAMES GRAHAM,
DETROIT, MICH.

TELEPHONE 2083.



JACKSON & CHURCH,

BUILDER OF DUPLEX HOISTING AND DECK ENGINES.

Plain Finished and Automatic **ENGINES,** From Heavy Patterns at Moderate Prices.

Vertical, Horizontal, Marine and Locomotive **BOILERS** Strictly First-Class and Highest Test.

SEND FOR CIRCULAR AND PRICES. **SAGINAW, MICH.**

Nautical Watch Chain.

SOLID GOLD. SHIP-SHAPE IN EVERY DETAIL.

Sheaves work, snatch block opens out and seizings are passed correctly.

MORGAN A. ROBERTSON,
26 John Street, New York

Send for Descriptive Circular.

CRANDALL'S PATENT PACKINGS.

FOR STEAM, WATER AND AMMONIA.

Not having been subjected to the injurious chemical action of boiling oil, outlast all others, and never melt and gum. We are constantly displacing other packings on Lake and Ocean Steamers, and can guarantee our goods for marine work. Ask the man offering "the same thing" to explain his process. He boils his goods in oil.

Send for Descriptive Catalogue and Samples.

CRANDALL PACKING CO.

New York, 136 Liberty Street. Chicago, 51 S. Canal Street. Main Offices and Works, PALMYRA, N. Y.

Paint your Vessels with **Superior Graphite Paint**

NO BLISTERING, CRACKING OR SCALING.

Made especially for Stacks, Decks, Sides, Hulls and Water Compartments.
Strictly anti-rust, and most durable and economical.

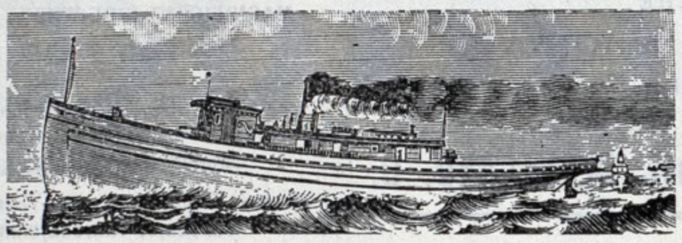
DETROIT GRAPHITE MFG. CO. 542 River St., Detroit, Mich.

WHITTON & BATES, Agents, 503 Perry-Payne Building, Cleveland, O.

H. A. HAWGOOD, Pres't. PHILIP MINCH, Vice-Pres't. GEO. ELSEY, Jr., Gen'l Mang'r. J. A. SMITH, Sec'y. J. R. SPRANKLE, Treas

The Cleveland Tug Company,

First-class Tugs, Steam Pumps, Divers, Hawsers, Lifting Screws, Etc., furnished Promptly on Orders by Telegraph or otherwise.



Steamers when outside wanting our Tugs, blow one long whistle and as many short ones as they want tugs.

OPEN DAY and NIGHT. DOCK and OFFICE FOOT of FRONT ST.
Long Distance Telephone 725. Cleveland, Ohio.

C. D. THOMPSON, Manager. C. L. BOYNTON, Sec. & Treas.

THOMPSON TUG LINE,

PORT HURON, MICH.

Tug Geo. E. Brockway, engine 28x30; Tug M. F. Merick, 2 engines 20x24, each; Tug James Ash, engine 14x16; Lighter Clinton, 650 tons capacity, with full wrecking outfit, stationed at Sault St. Marie, Mich.

Tug C. D. Thompson, engine 22½x26; Tug C. L. Boynton, compound engines, 17x34x30 in. stroke; Tug J. C. Ingram, engine 17x19; Lighter Mentor, 450 tons. Complete wrecking outfit stationed at Port Huron, Mich. Sch. John Wesley, 85 tons.

The "CINCINNATI" Automatic

STEAM STEERING GEAR

Simple, Powerful Machine. Noiseless and Sure. Send for Circular.

FRONTIER IRON WORKS, Detroit, Mich.,

AGENTS FOR THE LAKES.

AMERICAN STEEL BARGE CO.

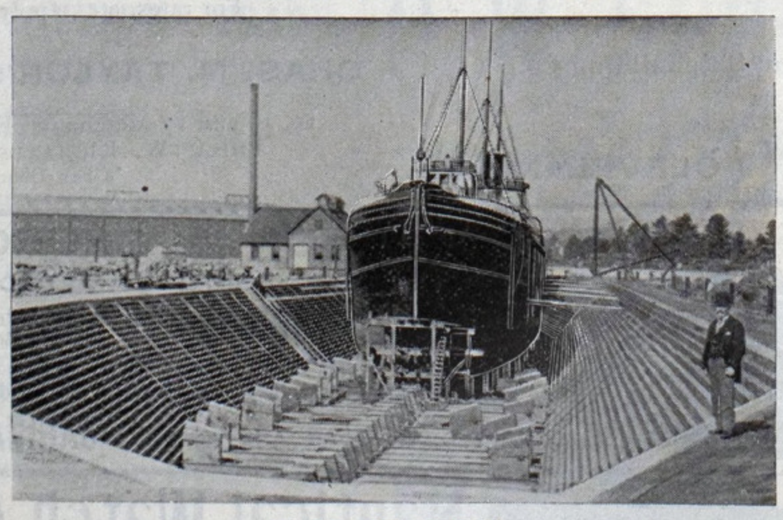
STEEL AND METAL SHIPS

OF ALL CLASSES BUILT ON SHORTEST POSSIBLE NOTICE AT OUR YARDS AT

WEST SUPERIOR, WIS., and also at EVERETT, WASH.

PHOTOGRAPH OF 300 FT. BOAT IN DOCK.

Plates and Material Always on Hand to Repair all kinds of Metal Ships in Shortest Time.



Best Quality of Oak in Stock for Repairing Wooden Vessels of all Classes.

SIZE OF DOCK

Length, Extreme	537 feet.	Entrance, Top,	55 feet 9 in.
Breadth, Top,	90 " 4 in.	Entrance, Bottom	50 "
Breadth, Bottom	52 "	Depth over Sills	18 "

LARGEST DRY DOCK ON THE LAKES.

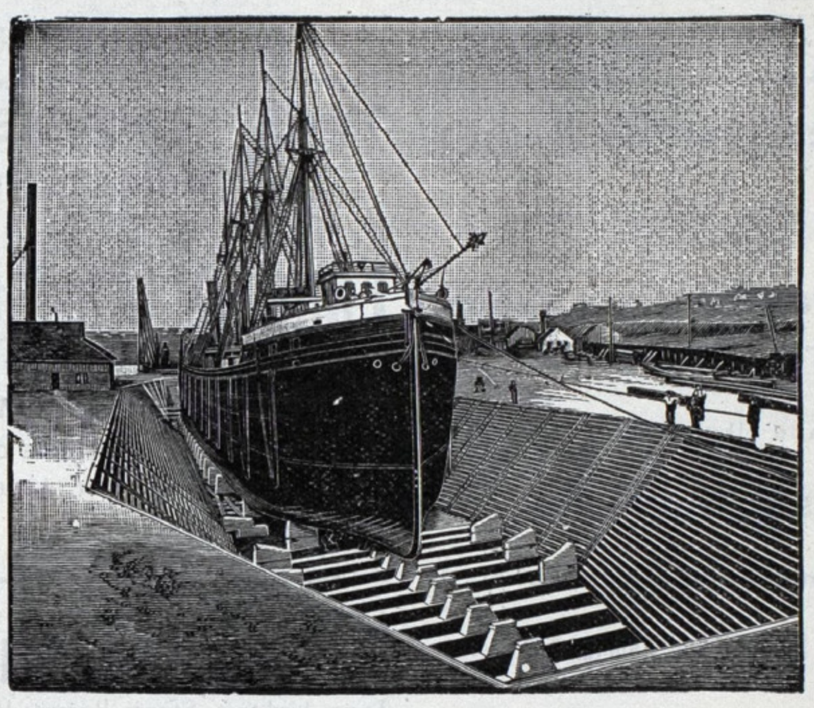
PRICES FOR REPAIRS AND DOCKING SAME AS AT LOWER LAKE PORTS.

SUPERIOR, WIS.

A NUMBER OF PROPELLER WHEELS IN STOCK AT DRY DOCK.

THE SHIP OWNERS DRY DOCK CO.

Largest DOCK YARD on the GREAT LAKES.



Capacity with Two Docks to Dock the Largest Ships on the Lakes.

GENERAL REPAIR WORK PROMPTLY ATTENDED TO.

Being equipped with Lucigen Lights we can do work at night as well as day.

TELEPHONE 1635. **Foot of Weddell St., CLEVELAND, O.**

ESTABLISHED 1857.

THOMAS MARKS & CO.,

Merchants, Forwarders and Ship Owners.

PORT ARTHUR, CANADA.

N. B.—Special attention given to chartering vessels.

Calvin Carr. G. C. Blair. John Mitchell.

CARR & BLAIR

VESSEL AND INSURANCE AGENTS,

Rooms 1 and 2. Tel. Main 869.

12 Sherman St. CHICAGO.

A. A. Parker. James W. Millen. B. W. Parker.

PARKER & MILLEN,

Vessel & Insurance Agents.

Iron Ore & Coal Cargoes a Specialty.

Rooms 3 & 4 15 Atwater St., West.

DETROIT, MICH.

C. F. Palmer. H. W. Cook. Capt. J. A. Calbick.

Palmer, Cook & Calbick,

Vessel Agents and Underwriters,

No. 6 Sherman Street, Chicago, Ill.

Telephone, Main 3952.

J. G. Keith. D. Sullivan.

J. G. KEITH & CO.

VESSEL AND INSURANCE AGENTS,

140 and 141 Rialto Bldg. CHICAGO.

Telephone No. 3658.

JOHN PRINDIVILLE,

VESSEL AND INSURANCE AGENT,

12 Sherman Street,

Telephone Main 129. CHICAGO.

C. A. MACDONALD & CO.,

GENERAL MARINE INSURANCE AGENTS.

RIALTO BUILDING, CHICAGO, ILL.

THOS. WILSON,

MANAGING OWNER WILSON'S TRANSIT LINE,

General Forwarder, Freight and Vessel Agent. CLEVELAND, O.

C. R. JONES & CO., VESSEL AGENTS

FIRE AND MARINE INSURANCE.

Nos. 501, 502 and 503 Perry-Payne Bldg., CLEVELAND, O.

JOHN MITCHELL. JOHN F. WEDOW. ALFRED MITCHELL.

MITCHELL & CO., Vessel and Insurance Agents,

Office Telephone, 767. 508-509-510 Perry-Payne Building,
Residence John Mitchell, 3505. CLEVELAND, O.

JEFFERY'S MARINE GLUE

For Paying Seams of Decks and other Purposes.

L. W. FERDINAND & CO., BOSTON, MASS.

SEND FOR CIRCULAR.